

# AUTOMOTIVE INDUSTRIES

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# AUTOMOTIVE INDUSTRIES

VOLUME 58

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NUMBER 21

## Price Selling Encourages Price Buying at Factories

*Automotive purchasing agents accused of thinking only in terms of price, but the salesmen are partly to blame.*

*Importance of other factors getting recognition.*

By Norman G. Shidle

WHO ever heard of the purchasing department of an automotive plant spending more for anything than it had to?

"Nobody," might be the answer if only purveyors of parts and factory equipment were to be quizzed.

But if general executives of the automotive plants themselves are queried, they can and do cite numerous instances where, to their minds, the purchasing department has spent a great deal too much for given units.

So the automotive purchasing agent rests between two scorching fires much of the time and only the grossly uncharitable can blame him if he appears at work in an asbestos shell that isn't too easily pierced during business hours. Accused by the supplier of thinking only in terms of price, he finds himself confronted day after day by salesmen whose first and last

argument is price and who help confirm him in any preconceived notions he may have on this subject. Commissioned by the management to get the best he can at the lowest cost, he is honor bound to think strongly in terms of price under any circumstances even though when properly approached he may have just as full a recognition of

the importance of quality and performance as anybody at his plant.

Despite his title, moreover, the purchasing agent in very few instances is the sole purchasing agency of the company for which he works. Depending on the product under consideration the engineer, the production man, the metallurgist or a technical committee has a part, usually a determining one, in deciding on the purchase. Thus the purchasing agent in an automotive plant, generally speaking, has no mean task so far as internal and external business contacts are concerned, let alone the necessity for his being thoroughly competent in the actual work of his own division.

The purchasing agent, in other words, is not always the center of buying responsibility, but he is almost always the center of criticism about buying methods and

practices. For that reason he probably gets a large share of criticism for unfavorable conditions which does not properly rest entirely on his shoulders, while getting less than his share of general credit for whatever constructive advances may be made in buying practices.

These factors bear consideration at this time when particular attention is be-



*The purchasing agent is accused by the supplier of thinking only in terms of price. On the other hand, his bosses in the automotive plants are apt to be of the opinion that the prices he pays for given units are too high. His job is no sinecure*

ing focused on adjustment of relations between buyers and sellers within the industry. Forced by the new competition of industry with industry to look for ways of strengthening the whole automotive business as a unit, manufacturers are coming to a fuller realization of the necessity for a new and more active type of cooperation between buyers and sellers within the industry, and consequently are analyzing purchasing costs as well as methods more carefully than ever before.

There was a time, perhaps, when a brief "\$5,000" was sufficient answer to the question, "How much did that machine tool cost?"

But that era is past. The dollars paid out in return for the delivery of a tool or a part are coming to be generally recognized as only one of seven or eight important factors in the real cost. The rapidity with which technical progress has been made in the parts and factory equipment fields, the constant changes that are taking place, the multitude of different makes of the same general type of product and the internal necessity for getting the best at the lowest possible cost all have combined to raise to a place of prime importance those secondary buying costs which once were minor considerations.

Let us look for a moment at the elements which properly may be considered in making intelligent purchases of either parts for a vehicle or equipment for the factory which builds it. Some of them are:

1. Time of technical men spent in interviewing salesmen, reading trade and technical publications and generally keeping track of what is new and understanding details of particular new products.
2. Time of technical men spent in actually testing and trying out such of these new products as they believe might conceivably be worth purchasing at a later date. (The same considerations are involved in replacing worn-out equipment at any given time.)
3. Time involved in actually setting up machine or equipment and getting it into original operation.
4. Time involved in adjustments and service during early operation of equipment to get it into permanently smooth operation.
5. Time of purchasing agent or purchasing department in discussing and completing details of price and so forth.
6. Clerical cost of purchasing department routine.
7. Operating and repair costs on equipment after

it has been installed and during life of its operation.

8. The actual dollars and cents paid by the purchaser to the seller.

Viewed in this light—and recent conversations with a number of automotive executives indicate that this

broad view of buying is gaining headway—the basic cost of any item bought by an automotive manufacturer obviously involves a multitude of elements in addition to list price which are of very practical importance from the financial standpoint of the buyer; for obviously there are many other factors in addition to the eight mentioned.

That there is plenty of purely price buying—probably too much—in the automotive industry and that the purchasing department

themselves are strong factors in this movement unquestionably has something of truth in it, but the cause of purely price buying does not lie entirely with the purchaser; price selling has much to do with it.

Selling purely on the basis of price in every industry, whether at wholesale or retail, involves the line of least resistance for a salesman, and it is for that reason probably that it is practiced widely. Selling on the basis of detailed knowledge of the customer's needs, the application of the product to his manufacturing requirements and the permanent values involved in quality always requires more effort and consequently is more difficult to do consistently day in and day out in the face of all circumstances. Even when approaching production men and engineers, the technical and manufacturing values of a product are not always presented in

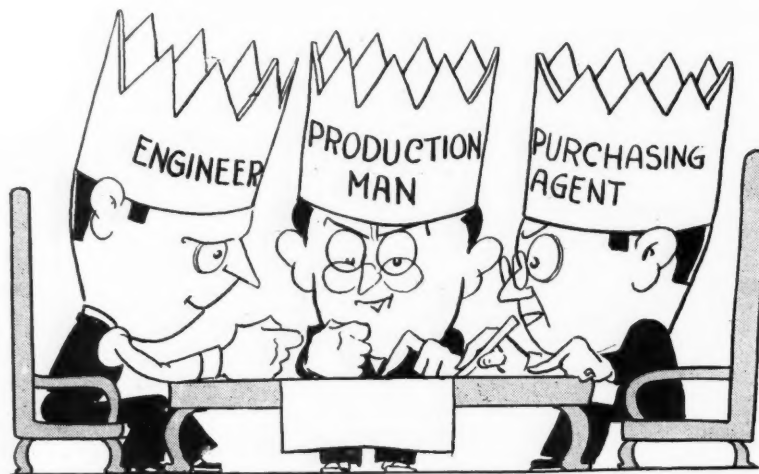
operating terms. This is illustrated by an incident which occurred in a large factory a few months ago and which is related by the assistant superintendent of the plant in the following words:

"We needed to buy a new machine not many months ago," he said, "and I have been doing most of the interviewing of salesmen and deciding on what sort of stuff we should buy.

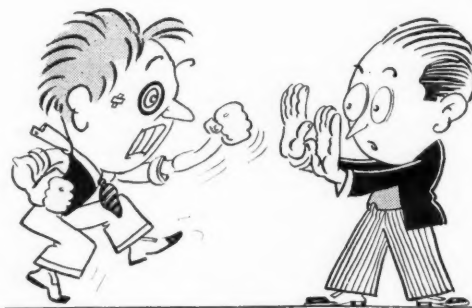
"Practically every salesman that came in started to talk price as soon as he arrived. The thing he wanted to know most was what price one of his competitors

had given me; then he would try to slice something off that. My heavens, you would have thought that was all there was to it!

"All except one salesman. This fellow represents a very fine machine tool jobbing house, which handles a fine line of quality stuff. He came in and tried to sell



*The "Big Three" in the purchase of new tools and equipment in most automotive plants are the engineering department, the production department and the purchasing department*



*The assistant superintendent was so thoroughly sold on the quality of the machine that he stood up and fought for it—and got it*



me on his machine. We talked the proposition over several times and the more I got into it the more I was convinced that his machine was the best one for us to get; he certainly had a damned fine product. His price was about \$1,000 higher than that of his nearest competitor but he wouldn't cut it.

"After going over the whole thing very carefully I decided that was the machine we should have, so I took it up with our superintendent and we put through a recommendation to the purchasing department to buy it.

"A few days later, back came a letter from the purchasing department to our general manager, saying in effect, 'The price on this machine is far too high, why not buy one of the other cheaper ones?' When our superintendent showed the letter to me he said:

"Well, there we are again. Guess we'll never get what we know we need. Suppose the best thing to do is to let them buy whatever they want.'

"I couldn't see that in this case because I was particularly well sold on this particular machine.

"Anyhow, I said to the superintendent, that I'd like to put up a fight on this if he didn't have any objections. He told me to go ahead, but without much hope.

"Well, I finally went to the general manager with the thing—he's a mechanical engineer himself and could understand what I was talking about—and then I got this particular salesman in to tell his story direct. Between the two of us we did a successful job out of it. And we bought the machine I had originally recommended that we should buy.

"My boss told that story to a meeting of our salesmen recently and told them that if they worked along more constructive lines with a little more backbone we would be able to sell more of our own goods at a decent price even in the face of the cut-throat competition which exists at the present time. And, by golly, we would!"

The incident points to the possibilities of vigorous, constructive selling. Had the man relating the story been merely favorable to this particular tool, that tool would not have been bought; it was necessary that the salesman convince him of its worth so strongly that he would fight for it. And the interesting part is that, in this as in many other cases, the order would have been lost before the salesman knew about it; he probably would have had no opportunity to present his arguments again. The purchasing department's recommendation

merely would have been accepted, and that would have been the end. The salesman had to do a positively constructive job in the first place or not at all.

The story also emphasizes the existence of a number of influences in connection with every purchase made

in the automotive field. The tendency for general executives to participate personally in purchasing and deciding on factory equipment is very strong in a number of plants, particularly in those where the general executives have come to their administrative jobs through the manufacturing division. And there are a number of important heads of automotive concerns in this category; such names as W. S. Knudsen, DuBois Young, A. R. Glancy, Paul Seiler, Walter P. Chrysler,

Joseph B. Graham and a score of others in different branches of the industry come to mind at once.

One president when asked recently, "Who is the final word on machine tool buying in your plant?", for instance, replied, "I am." This he qualified by saying, "That is partly because I happen to have come up through the production department. In most cases I accept the recommendations of my works manager, but I have a rather active personal interest in such things. After all this is a manufacturing business."

Another, head of an even larger company, said, in reply to the same query, "I hold my plant managers entirely responsible for the purchase of machines and equipment in their plants. Naturally they consult with me a good bit on anything of importance, because they know I devote myself very largely to the manufacturing end of the business."

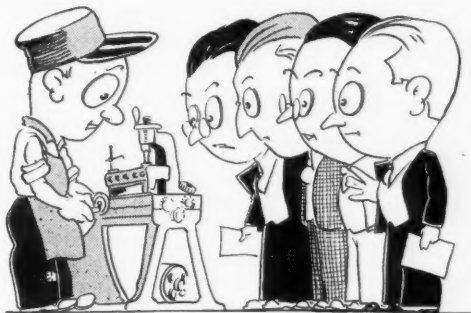
Even in instances where the head of the organization is not in any sense a technical man, however, the tendency to take an active interest in purchasing methods and selection of equipment seems to be growing. This is evidenced partly through personal opinions expressed by some of those men in informal conversation and partly by the growing degree of coordination apparent between various departments of the factories in buying. The whole matter seems to be getting less cut and dried as time goes on, the interplay of ideas

and knowledge of the engineer, production man and purchasing agent being brought together more and more in a cooperative conference manner under the influence of more active and direct chief executive interest.

An executive of one of the biggest of the parts manufacturers, for example, writes the following as regards



*The tendency for general executives to participate personally in purchasing and deciding on new factory equipment is very strong in a number of plants*



*The need for analytical buying is so clear that some automotive companies are using proving ground methods on new machine tools*

buying methods in his plant: "Cooperation between the manufacturing, purchasing and engineering departments is essential. The engineering department in designing a product should call in the purchasing department; also the manufacturing department on buying and manufacturing problems. This is the case in our company; there is the closest cooperation between these three departments in our company which is run on a real budget system." In this company recommendations for purchase of tools usually come through the master mechanic or the head of the standards department.

In another important parts company the recommendations of a department manager are given to the works manager, who, if he considers the recommendation worth further consideration, forwards it to the chief engineer for investigation. The chief engineer studies the subject and collects all possible information on the present machine, methods, production, delays, etc. Then he requests the purchasing department to collect infor-

mation on prices, manufacturer's guarantees, delivery, etc., of such machines as the chief engineer thinks suitable for the job. He compiles the results of his findings in a report with recommendations to the department manager and to the works manager. Then follows a conference at which all angles are discussed and mutual agreement is reached as to the machine to be purchased.

So go the variations in detailed method throughout different automotive plants. But through all of the buying ideas now current in the more successful factories runs the thread of greater executive interest, wider use of all departmental knowledge in selection, better coordination of all these ideas and more careful advance analysis of the product to be purchased from a performance as well as a price standpoint.

The necessities of present production and competition are such as to put a premium on analytical buying, based on clear recognition of all of the cost involved in a given purchase, such as never before existed.

## Austrian Author Discusses Diesel Engine Problems

**A**S the field of application of Diesel engines is being widened, types of construction are multiplying. Almost every new application brings with it new problems, and it is for this reason that the older books on the subject, which dealt with the engine chiefly as a prime mover for powerplants, are rather unsatisfactory from the standpoint of the investigator interested in any of the newer applications.

The various problems arising in Diesel engine design are dealt with broadly in a new volume, *Dieselmashinen*, by Dr.-Eng. Julius Magg, professor of heat engine design at the University of Graz, Austria, recently issued by the V.D.I.-Verlag, Berlin. Rather than follow in the footsteps of previous authors in the arrangement of his material, Dr. Magg sought for a new method of treatment specially adapted to the subject in hand. For one thing, he endeavored to separate fundamentals which will not be affected by the course of progress, from information which, while correct and up-to-date at the time of writing, might be entirely obsolete a few years later. This, of course, is a very sound principle from the standpoint of the book publisher, whose business is subject to the laws of economics the same as any other.

### In Three Parts

In accordance with the above plan, the text is divided into three parts. In the first part, *Fundamentals*, the author has included all that appeared to him as thoroughly established and which will be affected not at all or only slightly by the progress of the years. In the second part, *Types of Construction* is given a cross-section of the present status of Diesel engine construction. While the illustrations are generally those of particular engines, the text is not descriptive of these designs but discusses such fundamental problems as two-stroke vs. four-stroke, horizontal vs. vertical engines, low-speed vs. high-speed engines, etc. In this section of the book there is included a short chapter on *Motor Vehicle Engines*.

The author points out that for this purpose the Diesel engine has the advantages that it practically eliminates fire risks and reduces fuel costs by about 70 per cent. There are, however, numerous difficulties to be over-

come; these have nothing to do with the structure of the machine and the thermal stresses, but relate to the metering of the fuel, its injection and combustion. If it is admitted that for motor vehicle service the engine should not weigh more than a carburetor-type engine, then the amount of fuel which must be metered when running a six-cylinder 40 hp. engine throttled down is equal to a globule about 1/16 in. in diameter. This is equal to pump leakage or the breathing action of the fuel line under the high injection pressures. At the present time the high-speed Diesel engine is being applied to trucks, and the difficult path of a practical Diesel engine for passenger cars is still to be traversed, but the author says it may be taken for granted that in the end this object will be accomplished also.

### Skips Design of Parts

As regards the design of parts, the author says he had to forego the inclination to deal with this subject, however enticing, because it would have increased the scope of the volume excessively. For information on this subject the reader is referred to works mentioned in the bibliography.

In the third section certain special problems connected with Diesel engines that lend themselves to mathematical treatment are dealt with in that way. They include such problems as the effect of a reduction in the excess of air in the charge (which in modern Diesel engines generally amounts to about 80 per cent); reduction of air excess and compounding; the scavenging process in two-stroke engines; the exhaust process in two-stroke engines; supercharging (considered both from the thermo-dynamic and the mechanical point of view); two-stroke engine with crankcase precompression; exhaust gas turbines, and the characteristics of a cycle intermediate between the constant-volume and the constant-pressure cycle.

The volume is illustrated with numerous line drawings, some on large size folding plates, and some half-tones; and it contains a bibliography with critical (and sometimes caustic) comments of the author. As a product of the bookmaker's art it is of a degree of excellence that is rare in books which, like this one, appeal only to a highly technical and therefore narrow class.



# Just Among Ourselves

## Use Secondary Roads and Escape Traffic

NOW that summer is nearly on us again and vacation schedules are being made up, it seems like a good time to bring up once more our campaign for greater use of secondary and semi-improved roads by tourists and casual week-end travelers. More pleasure for the idling motorist and less congestion for the hurrying main road traveler are among the chief benefits we claim will result from the campaign. We still feel that, however much owners of isolated farms may "view with alarm," the automotive industry has something to gain from urging the promotion of some such campaign by various States. The possibilities are again emphasized by the Ohio road survey recently completed which shows that 58 per cent of the daily motor vehicle mileage passes over the first class roads which comprise 13 per cent of the total road mileage. Coupled with such a campaign might be an attempt to put into slightly better condition the now wholly unimproved roads.

\* \* \* \*

## Employment Increase a Boon to Business

A STEADY increase in the number of men employed throughout the country forms perhaps the cornerstone of predictions about the continuance of satisfactory business conditions for the remainder of the year. Department of Labor statistics show that greater outdoor activities were partly responsible for the substantial gain in employment which took place in April, while F. I. Jones, director general of the Department of Labor Employment Service, believes that May

has shown further increases. Large numbers of men are still unemployed, to be sure, but employment gains can hardly fail to mean that buying power is increasing rather than decreasing.

\* \* \* \*

## Automotive Stocks and the Bull Market

WE have been wanting for some while past to make some sort of comment on the frenzied stock market activity as it has affected automotive stocks, but it seems as though nothing is ever going to stabilize sufficiently to permit us to take a chance with any statements that aren't going to be read for a week after they have been written, as is usually the case with this page. Whatever of inflation there is in the current market—and obviously there is a good deal—automotive stocks as a whole do not look to be afflicted in this way to anything like the extent of those of some other industries. Many automotive stocks are selling for hundreds of per cent more than they were two or three years ago, but in certain instances at least the fundamental value of the securities has increased proportionately to the stock market price.

\* \* \* \*

## Little Direct Relation to Progress of Industry

AS usual, however, the current eccentricities of the market seem to have little direct relation to the progress of the industry basically. Despite violent fluctuations in the market, the automotive industry today gives every indication of being pointed just where it was at the beginning of 1928—that

is, toward a year of good business with satisfactory profits for a majority of companies, but with little expectation of new records either in sales or production. A few companies will reach new high points in 1928; a few will show unusually bad records. From the stock market standpoint again, it is interesting to learn from Leonard P. Ayres that 30 common stocks have furnished a large part of the trading in the last three years and that among these Chrysler stock is now worth about 1200 per cent as much as it was at the beginning of 1925; General Motors, 830 per cent as much; Packard, 531 per cent as much; Nash, 301 per cent as much; and Hudson 284 per cent as much.

\* \* \* \*

## Profits Increasing With Production

THAT general progress has been made in profits as well as production thus far in 1928 is strikingly illustrated by analysis of earnings per share during the first quarter. Thirteen representative companies earned a total of \$19.62 a share in the first quarter of 1928 as compared with \$15.93 a share during the same period in 1927. These figures emphasize sound progress even more than actual total earnings statistics might. The companies included in the list summarized are Chrysler, Dodge, General Motors, Graham-Paige, Hudson, Hupmobile, Mack, Motor Wheel, Nash, Stewart-Warner, Studebaker, Willys-Overland and Wright Aero. Out of the group of 13, 10 showed higher earnings per share than in 1927, while decreases were recorded in only three instances.—N.G.S.

# Resale of Cars Sold as "Junk"

## Preventable in Most States

*Practice specifically forbidden by law in some cases while in others dealers can get protection by writing "Sold as Junk" on title certificate or bill of sale.*

By John C. Gourlie

**H**OW can cars sold for junk be prevented from coming back to the dealers in trades?

The cooperative junking organizations started by dealers in various cities represent one attempt to answer the question. But this plan implies that the dealer has no control over the disposition of a car sold for junk unless he controls the junking organization, either individually or through an organization of his fellow-dealers in his territory.

In an effort to find out whether a dealer might in some comparatively simple manner secure assurance that an unmerchantable used car would actually be junked, the Chilton Class Journal Co., instituted an inquiry into the legal aspects of sales for junking. The inquiry revolved around three questions:

1. Is it legal for an automobile dealer to withhold the bill of sale or certificate of title when disposing of an automobile to a junk yard?
2. Is it legal for an automobile dealer to write "sold for junk" across the face of the bill of sale or certificate of title accompanying an automobile sold to a junk yard?
3. Is it legally permissible to make any use of the bill of sale or certificate of title to assure that a car sold for junk will actually be junked and not resold as a used car?

The results of the survey are not conclusive, but they do clearly indicate that in some States procedure by the dealer to prevent resale of the car sold for junking is provided for by law, and that there is sound legal opinion to the effect that such procedure would be permissible in any State.

### Test Cases to Decide Issue

Apparently, however, there has been little effort on the part of dealers to take measures of this character. Many of the State authorities who were questioned reported that they had never been faced with the proposition and indication is that test cases would have to be held in many States before the practice would be officially recognized.

In the opinion of Wellington Gustin, legal editor of *Motor Age*, there are no laws against withholding the bill of sale or certificate of title when selling a car to be junked, if the parties to the transaction so agree. He recommends that such cars be sold simply as junk,

which should take them out of the class of property regulated by State laws as vehicles of transportation, and place them with ordinary property without special laws to govern their sale and use. This covers the first question. With regard to the others, Mr. Gustin says:

"I know of no objection to the dealer or seller of an automobile marking 'sold as junk' across the face of the bill of sale or certificate of title in disposing of a car to a junk yard. There should be no transfer or registration, as there should be no occasion for re-use.

"I know of no objection to make any use of bill of sale or certificate of title to assure that the buyer will abide by his agreement to junk the purchased automobile."

### Could Sue for Damages

Mr. Gustin is further of the belief that if the purchaser secures a reduction in selling price through an agreement to junk, the seller has the basis for an action for damages if the agreement is violated and the car resold.

The opinion that the certificate of title or bill of sale can be withheld by the dealer is not generally concurred in by other authorities, as will shortly appear, but so far as is known there has been no attempt to test the plan. Commenting on Mr. Gustin's opinion, Robert A. Brannigan, patents department manager, National Automobile Chamber of Commerce, says:

"Of course, Mr. Gustin's comments are in point, but presumably involve too much litigation and other usual ills.

"What on earth is wrong with the following proposition: When a dealer sells a car as junk, why not take a sledge hammer and do about two minutes work on the car, smashing up the engine jacket, and then take a couple of swats at the rear end and the steering gear and I will guarantee the car will never get on the road."

Mr. Brannigan's plan has the merit of simplicity, but obviously it would cover only the sale of a car for scrap metal. The dealer does not want the "crock" to come back in trade, but he usually does not object to salvaging of the parts. Sales as scrap would bring a negligible price if they were possible at all.

The answer of C. A. Vane, general manager, National Automobile Dealers Association, to question No. 1 is



"No," and to the others, "Yes." He points out that the laws requiring the giving of bill of sale or certificate of title when a motor vehicle is sold make no exception in respect to vehicles sold to junk yards to be dismantled and scrapped, so far as he has been able to learn. He comments further:

"The intent and purpose of the motor vehicle bill of sale and certificate of title law of every State is to protect the public from deceit, imposition and fraud in the selling and buying of motor vehicles. When an owner sells a motor vehicle to a junk yard or any person, to be dismantled and scrapped and accepts a junk or scrapped price for the property from the buyer, it is my opinion the seller in writing 'sold for junk' or 'sold for scrapping' across the face of the instrument used to transfer title, is not only strictly within his legal rights, but is carrying out the spirit, intention and purpose of the motor vehicle law of his particular State and that the buyer has no legal right to complain of this notation because he has suffered no legal wrong. Again, in making such notation, the seller, if a dealer selling used cars, as most dealers do, is only rightfully protecting his used-car market from the wrongful competition of a junk yard which bought his discarded used cars on the agreement they were to be dismantled and sold to buyers of metal scrap, which might undertake to resell the cars as used cars."

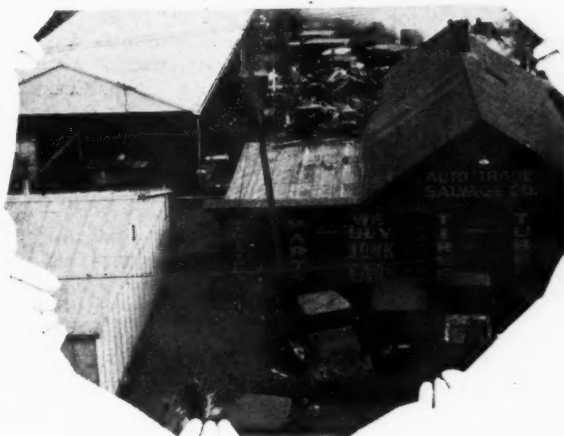
With this background of general opinion, the answers to the questions by motor vehicle commissioners and other state authorities are of particular interest. Replies from nearly all the States were received, but many contented themselves with pointing out that the State had no certificate of title law, or that the law did not specifically cover the points in question. In several instances, however, the absence of special provisions was held to render permissible the procedure implied in the second and third questions.

#### States Give Their Opinions

Excluding indefinite or non-committal replies, the State opinions follow:

**ARIZONA**—It is not legal under our highway code for the dealer or seller to hold certificate of title covering motor vehicle, but must surrender title to the purchaser. Should one furnish affidavit that the motor has been absolutely broken up in the junk yard, accompanying said affidavit with bill of sale, then the vehicle is placed in position where it is impossible to again secure title covering that particular motor. It is necessary that the bill of sale travel through the entire life of the vehicle as oftentimes the only identification in this department is the motor number. When a junk dealer sells a motor, the same must be accompanied with certificate of title, or bill of sale, the former if the vehicle was registered in this state or any other state having similar law.—E. M. WHITWORTH, SUPT. HIGHWAY DEPT.

**CALIFORNIA**—When an automobile dealer sells an automobile to a junk yard it is his duty to furnish the buyer with the certificate of ownership covering the automobile and to report the sale of the car to the Division of Motor Vehicles upon the form provided, which is called a Dealer's Report of Sale Slip. There is nothing in the motor vehicle law of California allowing or preventing the notation "sold for junk" across the face of the bill of sale or certificate of title. We would judge



*It is possible in most states to make sure that old cars sold as junk actually are junked, and not resold by the salvage yard and placed back in service*

this would be between the buyer and the seller, according to the price paid for the vehicle. Ordinarily we see no reason why the buyer should not recondition the car and sell it for operation on the highway, at which time, of course, he would pay the fee for operation.

If we understand your third paragraph correctly, the seller would have no right to make use of the bill of sale or certificate of title in order to assure himself that the car was actually junked, since according to law he should give the certificate of title to the buyer, making proper transfer of the vehicle.

For your information we might state that when a car is dismantled and the motor only sold, we then require that the certificate

of title be forwarded to this department with a notation that the motor only has been held or sold, and the certificate is so marked and returned to the owner of the motor to be used as his clearance in case he installs the motor in another car or sells it.—FRANK G. SNOOK, CHIEF, DIVISION OF MOTOR VEHICLES.

**COLORADO**—It is not legal for an automobile dealer to withhold a bill of sale or certificate of title when disposing of an automobile to a junk yard, for the reason that the law specifically requires that in all cases of transfer of an automobile, except in cases of dealers selling new motor vehicles, the certificate of ownership must be indorsed and delivered to the purchaser or transferee.

In my opinion it is perfectly legal for an automobile dealer to write the words "sold for junk" across the face of a bill of sale or certificate of title accompanying an automobile sold to a junk yard, and that such a practice is to be commended because this would be notice to any subsequent purchaser of the automobile that it was of little value. So far as I know we have no statutory provision either permitting or denying the right to make such a use of the bill of sale or certificate of title as will make certain that a car sold for junk will actually be junked and not resold as a used car.—WILLIAM L. BOATRIGHT, ATTORNEY GENERAL.

**DELAWARE**—It is unlawful and a misdemeanor for anyone to sell or purchase within the limits of this State any motor vehicle unless at the time of delivery thereof there shall pass between the parties such certificate of title. Upon the junking of the motor vehicle the party so junking said motor vehicle should immediately mail the certificate of title of this particular motor vehicle with a statement "this motor vehicle junked" to the Secretary of State, Motor Vehicle Department, Dover, Del.—WILLIAM BALL, MOTOR VEHICLE DIRECTOR.

**IDAHO**—When a dealer disposes of an automobile to a junk yard, it is required under the Idaho law that he submit the certificate of title to this office for cancellation. If the car is sold for junk, the dealer should certify such fact to this office. It is legally permissible to make use of a certificate of title to assure that a car sold for junk will actually be junked and not resold as a used car.—FRED E. LUKENS, SECRETARY OF STATE.

**ILLINOIS**—The questions contained in your letter have been submitted to the Attorney General, and he states that in the absence of any laws in Illinois to the contrary, the propositions which you have mentioned would be legal in this State.—FRANK T. SHEETS, CHIEF HIGHWAY ENGINEER.

**IOWA**—It is not legal for an automobile dealer to withhold certificate of title when disposing of an automobile to a junk yard. The car must be junked in the name of the owner as registered. It would be legal for the dealer to write across the bill of sale sold for junk, but, of course, he could not so mark the certificate as it is turned in at the time the car is junked.

Under the laws of this State it would be impossible for him to make use of the certificate because it would not be in the dealer's hands, he having turned it in to the County Treasurer prior to junking the car.—ED. M. SMITH, SECRETARY OF STATE.

MINNESOTA—When a dealer disposes of a motor vehicle his right to the registration certificate and the plates ceases and they must be returned to this office for registration. With the return of the registration certificate and plates he must report to this office that he sold the car for "junk." For this purpose we provide a blank. It is very desirable that he should write "sold for junk" across the certificate. There is nothing in the law that I know of making this illegal. Under the operation of our law if the car is re-registered to be used, we must require the payment of taxes and penalties in arrears which attach as a first lien in favor of the state.—MIKE HOLM, SECRETARY OF STATE.

#### Purchaser Gets Certificate

MONTANA—In Montana when an automobile dealer disposes of a car, no matter for what purpose, the assigned certificate of title and license receipt is to be delivered to the purchaser. It would be legal for the dealer to write "sold for junk" across the face of the certificate.—S. C. SMALL, DEPUTY REGISTRAR.

NEBRASKA—It is not legal to withhold the bill of sale or certificate of title. It is legal to write "sold for junk" across the face of a bill of sale or certificate of title.—M. G. TRACY, CHIEF CLERK, MOTOR VEHICLE DIVISION.

NEW JERSEY—In all sales or purchases of a motor vehicle from the manufacturer or the agent of the manufacturer, there shall be issued to the purchaser a manufacturer's bill of sale, and in all other sales it is required that the original bill of sale be assigned by the seller to the purchaser. If it is the intention of a dealer in salvaged automobiles to sell an automobile that has been purchased, a bill of sale should be obtained, as no automobile can be registered in New Jersey without the owner holding a proper bill of sale. There is no specific provision under our law covering sales of automobiles to a person, or persons, operating a junk yard.—WM. L. DILL, COMMISSIONER OF MOTOR VEHICLES.

NORTH CAROLINA—It is not legal to withhold the bill of sale or certificate of title. It is legal to write "sold for junk" across the face of a bill of sale or certificate of title.—AUTO LICENSE DEPARTMENT.

OHIO—The Ohio Bill of Sale Law specifies that it shall be unlawful for a corporation, partnership, association or person, the manufacturer of motor vehicles or the importer of motor vehicles, to sell, convey, lease, give away, transfer or exchange a motor vehicle, directly or through an agent or agency of such manufacturer or importer, or other persons unless such manufacturer, corporation, partnership, association, persons or importer or the agents of either, shall, at or before such sale, conveyance, transfer, lease, gift, exchange or passage of title, execute, in the presence of two witnesses, a bill of sale in duplicate, and deliver both copies to the purchaser, buyer, transferee, or person receiving such motor vehicle. Attached to this bill of sale when it is delivered to the transferee must be a copy of all previous bills of sale on such motor vehicle to show a complete chain of ownership back to and including the original owner.

While there is nothing in the blank form of bill of sale used in this State which provides for the cause or reason for selling, such as the wording "sold for junk," there is nothing in the law which would prohibit the wording being placed on the bill of sale.—CHALMERS R. WILSON, COMMISSIONER OF MOTOR VEHICLES.

OKLAHOMA—When the owner of a motor vehicle disposes of the same, if he has a certificate of title it should be properly assigned and delivered with the motor vehicle. If the motor vehicle is sold to a junk man he should then mail the title to this office advising us the motor vehicle has been junked. It does not affect a title by a party writing across the face of

it "sold for junk." For your information, we require that when a car is junked the certificate of title be mailed to this office with affidavit attached stating that it has been junked.—SYN. J. WHEELER, LEGAL CLERK.

OREGON—Has special wrecking blank which must be filled out before motor vehicle can be wrecked or dismantled.

PENNSYLVANIA—When a motor vehicle is sold in Pennsylvania in assembled form, it is necessary that title be properly assigned by the person selling the vehicle to the purchaser and if the purchaser dismantles the vehicle, he returns the assigned title without fee with the word junked written thereon. However, it is not legal for an automobile dealer to write "sold for junk" across the face of title certificate when the vehicle is sold in assembled form, nor is it legally permissible to make use of a bill of sale or certificate of title to show if the vehicle was sold for junk or not. If the purchaser retains the vehicle in assembled form, he must apply for title in his name accompanying application with proper title fee.—BENJ. G. EYNON, REGISTRAR OF MOTOR VEHICLES.

RHODE ISLAND—The State of Rhode Island has no title law. We will cancel a registration on the strength of a certificate returned to this office stating that the car was "sold for junk."—GEO. R. WELLINGTON, CHIEF CLERK, MOTOR VEHICLE DEPT.

SOUTH CAROLINA—Our Certificate of Title Law was repealed during the year 1927. In other words, if a motor vehicle owner decides that he wishes to junk his motor vehicle, he can do so without giving this office any information concerning it.—NAT TURNER, DIRECTOR, MOTOR VEHICLE DIVISION.

SOUTH DAKOTA—It is not legal to withhold the bill of sale or certificate of title. It is legal for an automobile dealer to write "sold for junk" across the face of a bill of sale or certificate of title after vehicle has been junked.—SECRETARY OF STATE.

TEXAS—Texas does not have a certificate of title law. Transfers in this State are made by filing a bill of sale with the county tax collectors with the transfer fee of \$1. Cars sold for junk should be accompanied by bill of sale to the junk dealer so that he will have proper title to any parts that he may later dispose of.—G. H. LLOYD, CHIEF CLERK, STATE HIGHWAY DEPT.

#### Not Legal in Virginia

VIRGINIA—Under the Virginia law an automobile dealer in disposing of a car to a junk yard should assign his title. The dealer has no right to write across the face of the title "sold for junk." Our law requires each owner of a motor vehicle to hold a title on his own car, or a title of the party from whom he secured it, properly assigned over to him.—JAMES M. HAYES, JR., DIRECTOR, DIVISION OF MOTOR VEHICLES.

Most of the States from which replies are not given do not have certificate of title laws. The implication in these cases is that the sale of a motor vehicle is entirely, so far as terms and conditions are concerned, between the seller and buyer, which would appear to give the dealer the type of control desirable in a sale to a junk yard.

There seems good reason to believe, then, that in many States at least the individual dealer can make sure that a car is junked. Even if this is true, of course, the value of cooperative junking plans is not necessarily depreciated, since it may be argued that a single dealer by insuring that cars sold for junk would actually be junked by receiving lower prices would place himself at a competitive disadvantage in the trade of the district.

But in view of the present broad interest in the junking question, it is believed that the results of the survey may contribute something worth while to the sum of knowledge and opinion on the subject.



# Blueprint of Lockhart Accident Accompanies A. A. A. Report

Diagram shows what happened to car after going into fatal skid. Left ground seven times in jumps through air ranging from 33 to 140 ft. in length.

**A**N interesting and novel feature of the official report of A. H. Means, assistant secretary of the A.A.A. Contest Board, on the accident which resulted in the death of Frank Lockhart, racing driver, at Daytona Beach recently, is a blueprint showing in progressive steps just what happened from the time the accident started until the car finally came to rest on the beach with Lockhart's body 51 feet away.

The report, which is addressed to the Contest Board, describes the accident as follows:

"Wednesday, April 25—On Lockhart's first run north, starting at 7:08 a.m., in slowing down at the end of the run he applied his brakes quite harshly, locking the right rear wheel for a distance of nearly 100 ft. He then made the turn, made whatever mechanical adjustments were necessary, and started his run south at 7:32. He completed his run south and started the return north at shortly before 7:59.

"Before leaving the south end on his fatal run, he advised his mechanics that in view of the fact he had made a fast run south, he intended to shoot for the record on his north run. About 700 ft. before approaching the timing wire, he went into a skid, the rear of the car swinging around toward the ocean.

"After the skid sideways, the car seemed to take a course with the beach when suddenly the tracks left the ground completely for a distance of 57 ft. At the point where he landed first there were three very decided wheel marks gouged in the sand in a parallel position to the course. He again hopped into the air for a distance of 33 ft., there being three distinct wheel marks deeply gouged in the beach where he next landed, apparently indicating that the car did not land squarely but partially at an angle. He again hopped 36 ft. and while in the air evidently turned crossways as he hit a ridge in the soft sand 20 to 24 in. high and gouged two very deep holes in this ridge approximately 30 in. deep. The car at this point was sideways, the holes being at least 10 ft. apart and about 5 ft. wide each. He then made a very high bounce in the air, traveling 140 ft. before again making contact with the sand. He landed apparently sideways, directly on the electric wires carrying the electric circuit from the trap to the timing instrument, between the anchor post for taking up the tension on the starting wire and the post carrying the marker indicating the start and finish of the mile record distance. There were two deep impressions in the sand at this point, approximately 5 or 6 ft. long, 3 to 4 ft. wide, and approximately 10 ft. apart, indicating that the car landed crossways of the beach. He next bounced 120 ft. and apparently landed on four wheels again, as at this point there

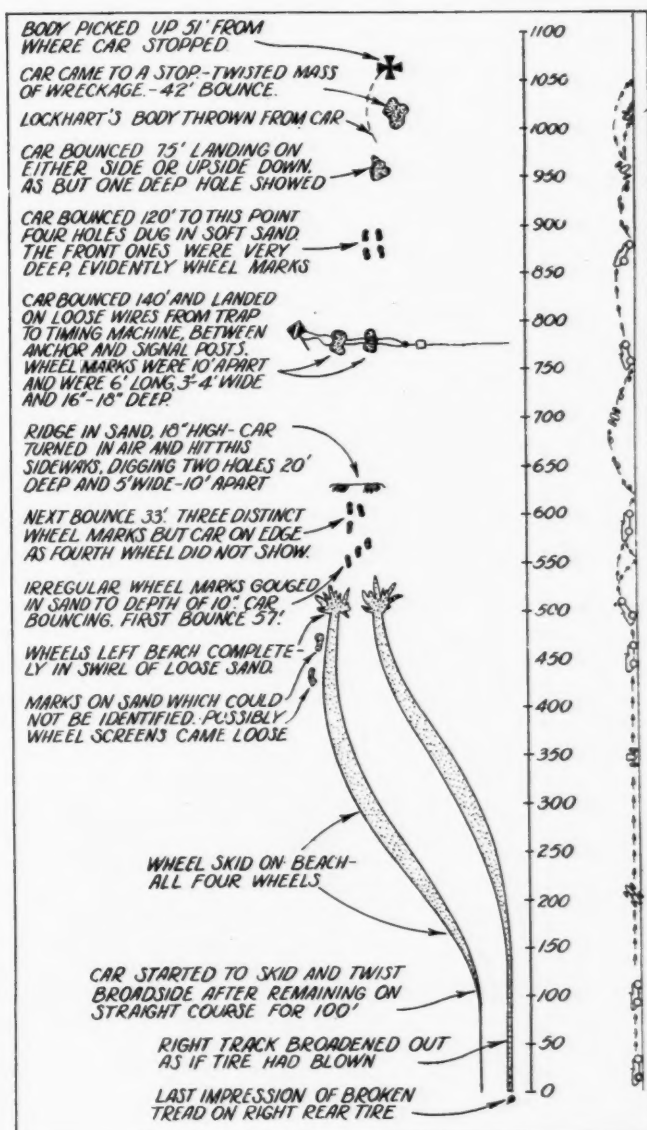


Diagram of Lockhart accident

were four distinct impressions on the sand, the two forward ones being considerably deeper than the two rear ones. The next bounce was 75 ft. and the car evidently landed on its side or top as there was but one large irregularly-shaped hole in the sand approximately 10 ft. wide, 5 ft. long, and 16 to 18 in. deep. The next bounce was 41 ft. when the car came to a rest. On the last bounce, Lockhart's body was thrown while the car was in the air and landed 51 ft. away."

# Instruction Books—Can They be Made to Suit Everyone?

*Task of presenting information so it will meet requirements of all readers is difficult one for car manufacturer.  
Trend toward special manuals for repairmen.*

By Robert L. Cusick

**A** SURE-FIRE method of starting an argument in any gathering of three or more automobile factory men, garage workers, chauffeurs or car owners is to introduce the subject of instruction books or maintenance manuals. An argument is inevitable if the subject "takes hold" because nearly everyone has his own opinion of what an instruction book should be.

The technical man wants a technical instruction book. The non-technical man wants his book couched in non-technical language. One wants plenty of cross section drawings; the other can get along with photographs. Mr. Smith does his own repair work and wants a manual that will tell him in detail just how to go about each job. Mr. Brown wants only to hit the high spots and the detail bores him. Mr. Doe doesn't even care about the high spots; he takes the manufacturer's word for it and commissions the garage man to look after his car.

An automobile instruction book therefore falls in a class with politics, philosophy and art as a controversial subject. No manufacturer has ever published a book of instructions that coincided one hundred per cent with all of his customers' tastes. It would be just as easy to build an automobile that suited everyone's ideal and purse.

Every once in a while someone writes a piece about these instruction books. About a year ago Ellis Parker Butler wrote a humorous criticism of the book which came with his car. His two chief complaints were, first, that he couldn't make head or tail of most of the text, and second, that most of what he could understand was negative in character in that it suggested all sorts of things which might go wrong and caused him to lose confidence in his car's ability to give dependable performance. He described one of the illustrations as looking "like a machine gun exploding at the butt."

Several months later there appeared in *Automotive*

*Industries* a communication addressed to The Forum, by H. F. Marshall. He had read Mr. Butler's article. He, too, was disappointed in most of the instruction books he had seen. Mr. Marshall, as a car owner, would like to have an instruction book of "the kind that every garage repairman would also appreciate. It would be mostly illustrations. If the assembly of the part was visible in the car it would not be treated in the instruction book. But illustrations would show how the insides looked. The text would explain clearly how each disassembly and adjustment should be made. The urge to take the works apart to see what they looked like inside would be reduced because the taking apart would have been done pictorially in the booklet, by the manufacturer.

"I have asked dozens of owners and many garage-men about instruction books. The desire to have workable information appears to be universal. Why the manufacturers' desire to meet the need is almost zero has been beyond my understanding," Mr. Marshall concluded.

## Widely Different Tastes

It will be noted that Mr. Butler's tastes run toward simple, non-technical treatment. A cross section drawing to him is nothing more enlightening than an exploding machine gun. On the other hand, Mr. Marshall asks for illustrations that are ordinarily understood only by those of a mechanical turn of mind, and for technical information.

This is a perfect illustration of two widely opposed views and emphasizes strikingly the almost complete futility of trying to produce an instruction book that will be above criticism. The best, apparently, that the car manufacturer can do is to make as close a study as possible of all the factors involved, giving due consideration to all classes of owners, and then proceed accordingly in the selection and preparation of his material.

It is doubtless a fact that a fairly large percentage of car owners give little study to their instruction books. Especially is this the case in most parts of the United States, where service stations are numerous and convenient and repair costs comparatively small, owing to the introduction of labor-saving shop equipment and tools for practically every common maintenance operation.

Roughly speaking, automobile owners can be divided into three classes as regards the degree of interest





which they may be expected to take in instruction books:

1. The owner who relies solely on garage and repair shop service to keep his car in running condition.

2. The owner who takes his car to the service station for most repairs but who elects to do his own oiling, greasing, polishing, tire fixing, etc.

3. The owner who can and does make all his own repairs, taking the entire car down if necessary and re-assembling it.

The proper course would seem to be to prepare the book with the idea of having it serve the needs of the latter class, since

it would obviously then contain all the information, and more, that would ever be desired by the other classes and everyone, presumably, would be satisfied.

This is what a number of companies do. Others, do not make their information complete enough for the third class and thereby lay themselves open to considerable criticism. One competent judge of such matters gives it as his opinion that about 50 per cent of the instruction books now in circulation by passenger car manufacturers contain sufficient information to enable a willing owner to make all necessary adjustments and repairs. The other 50 per cent he classifies as "worthless" when judged on this basis.

#### Does Price Make a Difference?

It is the opinion of some that the manufacturer of a car which sells in the upper price brackets, say, from \$1,800 up, can afford to slight the owner-mechanic in his instruction book, on the assumption that a man who buys a car at this price is usually the kind who wants all his repair work done at a service station. This may be true, but sooner or later the highest-priced new car becomes a low-priced used car and is apt to become the possession of a man who desires, or is forced, to do his own tinkering. Without the right kind of instruction book to guide him he is greatly handicapped. If he makes a few mistakes which result in the car "letting him down" he will condemn it, together with all others of the same make, and the factory loses the opportunity to make a friend who might have become a prospect for one of its new cars later on.

Not all instruction books put out by makers of high-priced cars fall into this category. Some of them are very complete. And by the same token, not all the books issued by builders of low or medium-priced cars answer all the questions that an inquiring owner might want answered.

## General Make-Up Characteristics of Instruction Books

Car	Pages	Illustrations		Car	Pages	Illustrations	
		Half-tone	Line			Half-tone	Line
Auburn	55	4	12	Marmon	65	10	10
Buick	67	49	9	Moon	96	18	23
Cadillac	116	78	2	Nash	72	40	10
Chandler	58	25	9	Oakland	64	36	7
Chevrolet	78	6	36	Oldsmobile	22	6	3
Chrysler	88	24	3	Packard	80	34	2
Cunningham	82	1	25	Paige	68	28	3
Diana	143	16	33	Peerless	68	18	9
Dodge	72	23	1	Pierce-Arrow	75	32	9
Elcar	60	4	4	Pontiac	37	1	25
Falcon-Knight	68	19	6	Rolls-Royce	124	29	16
Ford "A"	50	28	2	Star, now Durant	64	5	12
Franklin	91	89	37	Stearns-Knight	40	14	10
Gardner	31	10	12	Studebaker	112	33	45
Hudson	28	20	5	Stutz	126	28	12
Hupmobile	16	3	6	Velie	34	8	4
Jordan	46	13	4	Whippet 6	39	13	3
Kissel	79	15	22	Willys-Knight	36	13	2
La Salle	117	71	3	Wolverine	52	30	7
Lincoln	98	38	6				
Locomobile	59	9	15	Average	69	23	12

The oft-repeated phrase in some instruction books to "consult the nearest service station" is good advice in some cases, but in others it may be very irksome. For instance, some owners, even if they are willing, have no business trying to take up bearings or adjust the timing. On the other hand, there are some owners who can do the job as well as a lot of garage mechanics if the necessary information is available. Most owners probably could make a carburetor adjustment if full instructions were given. One manufacturer's book lists this subject in the index

and devotes a short section to it which tells the reader nothing more than that it is a delicate job to undertake and for that reason should be done at a service station. Some owners resent this practice of cutting the information short and claim that the manufacturers do it intentionally so as to make work for the dealers' service stations.

#### Special Books for Repairmen

Until a few years ago it was a policy of car manufacturers to make one instruction book serve the needs of both owner and service station repairman. Most companies still do this. For a long time, repairmen, especially those who really take an interest in their work and are anxious to learn as much as possible about the various cars they service, have complained against the policy, claiming that a book which was quite all right for the car owner fell short of giving them the voluminous and detailed information which their duties required them to have.

So during the last several years a new trend in instruction books has developed. Some companies are now issuing, in addition to the usual owner's book, a special shop repair manual for garagemen which treats in minute detail every conceivable maintenance operation. The two books form a striking contrast. The owner's book issued by the Chevrolet Motor Co., for example, contains 78 pages and 42 illustrations, whereas the repair manual comprises 262 pages and 298 illustrations. The pages in both cases are the same size.

This seems to offer a very practical solution to the instruction book problem in so far as satisfying both car owner and service station operative is concerned. Ford is working in the same direction but along somewhat different lines with the Model A. He is issuing special instructions for service stations in the form of monthly service bulletins which are punched

for insertion in an attractive leather binder that can be kept in the shop for handy reference. Each bulletin describes in detail one or more maintenance operations. This method possibly has the advantage of making the instructions seem less formidable, and consequently more digestible, to the average garage mechanic than if they came in one thick volume. On the other hand, a repairman confronted by a certain job might find that the instructions which he needed for it had not yet been issued.

#### Many Points in Common

All instruction books published for car owners have many points in common. They all stress the importance of proper maintenance with special emphasis on lubrication. License and insurance data are usually included. The standard manufacturer's warranty is printed. Owners are told to use only genuine replacement parts as supplied by authorized dealers and the procedure of ordering parts from the factory when necessary is explained. A large lubrication chart is shown, sometimes as a separate insert which can be taken out of the book and attached to the garage wall. Usually there is a list of the approved brands of engine oil and also a list of anti-freeze solutions for different temperatures. Instructions are given for starting and stopping and shifting gears.

Most manufacturers say something about the care of the finish and how to wash the car and clean the upholstery.

An accompanying table, listing several characteristics of the instruction books of 40 passenger car manufacturers, shows that the books vary in size from 16 to 143 pages. The average is 69 pages. In all except three cases the page size is 6 by 9 in. The exceptions are: Stearns-Knight, 7½ by 10 in.; Buick, 8¼ by 11 in., and Cunningham, 7¼ by 10 in. The average number of illustrations in the 40 books is 35. Of these 23 are halftone engravings and 12 line etchings.

Of the 40 books examined, eight were found to contain a price mark. The Rolls-Royce book is priced at \$1.50. Fifty cents is charged for Packard, Locomobile, Stutz and Franklin books while Chrysler, Falcon-Knight and Chandler ask 25 cents.

The Rolls-Royce and Locomobile books contain

blank pages for the entering of memoranda and the latter also is distinctive in that it is printed in type-writer type. The Oakland and Pontiac books each attempt to drive home to the owner the importance of heeding the instructions by the use of a cartoon. The same cartoon is used in both cases. It shows "the man who used his instruction book" drawing up in front of a theater with his wife. His car is spick and span and running nicely and he appears satisfied with the world. Below this "the man who didn't" is seen underneath his car pounding violently at the vitals while his wife, dressed for a trip, is berating him soundly for his carelessness.

A number of the companies list their factory branches and distributors. Nash inserts a post card which the car purchaser is asked to fill in and return to the factory so as to put himself on record as a Nash owner. The Nash book also contains a picture of the factories. For domestic distribution Nash publishes a separate book for each chassis model, but is now covering all models in one book for distribution in foreign countries. Studebaker has gone to the one-book system, giving the same book to the purchaser of a Big Six model, a Standard Six or an Erskine Six. Buick is another company that makes one book do for all models. Elcar follows the same plan. Willys-Overland has five different books, one for each model. A book for each model is the usual practice.

#### New Ford Book Conventional

The passing of the Ford Model T also marks the passing of the most widely read instruction book ever published and one that was distinctive in that it was arranged in the form of a catechism, with questions and answers covering all phases of maintenance and operation. The new Model A book is of the conventional type.

Whatever else may be said for or against instruction books, one thing is certain: They are part and parcel of the automobile manufacturer's business and they serve an important need. All may not measure up to the ideals of certain owners and repairmen, but they all do some good. The greatest trouble with them probably is that they are not read enough.

Perhaps Mr. Butler is right—the modern car is so well built that one doesn't need an instruction book until he is ready to trade it in for a new one.





# Inter-City Bus Lines Operating Throughout Great Britain

*Through trip from London to Newcastle, 276 miles, takes 12½ hours and costs \$4.80. Railroads losing business and plan to establish own truck and bus systems.*

By M. W. Bourdon  
Special British Correspondent

**A**LTHOUGH in the matter of time and average speed between terminal points there is no comparison between road and rail, in the fares charged there is considerable economy to the passenger who utilizes any of the network of inter-city bus services that are now in operation in England and Scotland. He secures first-class accommodation at less than the third-class fares on the railroad.

No wonder, then, that these services are finding ever-increasing patronage among people to whom the longer time en route is of no great importance and that the number and extent of such services continues to increase almost daily.

The longest distance covered by one service without passengers being asked to leave their seats—the longest through service—is that running between Newcastle-on-Tyne and London, with headquarters in the former city. The distance is 276 miles. One journey is made each way per day, the time occupied being 12½ hours. As in the case of all these inter-city, or express bus, services, the legal limit of 16 m.p.h. is not only greatly exceeded in the maximum speed attained, for some of the vehicles are capable of 50 m.p.h., but the average speed ranges from 17 to 26 m.p.h., according to the nature of the route.

The fare usually works out at approximately 1d (two cents) per mile, though in some cases it is appreciably less; the Newcastle-London journey is £1 for the single journey (276 miles for 240 pence) while the double journey fare is 35 shillings (552 miles for 420 pence). Some of the shorter services are run at an even lower rate; thus between Bedford and London the return fare is only five shillings, which means 104 miles for 60 pence.

Recently a committee representing owners of express inter-city buses has been formed to coordinate the existing services and link up those that are not already working in cooperation. A national timetable is being issued monthly, giving a fund of information in addition to an A.B.C. of the services, with starting and intermediate times, fares, etc. As a result it is possible

for a would-be passenger to book a seat from London to Aberdeen, a distance of 576 miles, entailing changes of bus at Newcastle and Glasgow only, though it would necessitate a night being spent at each of those places. The time on the road would be 26 hours.

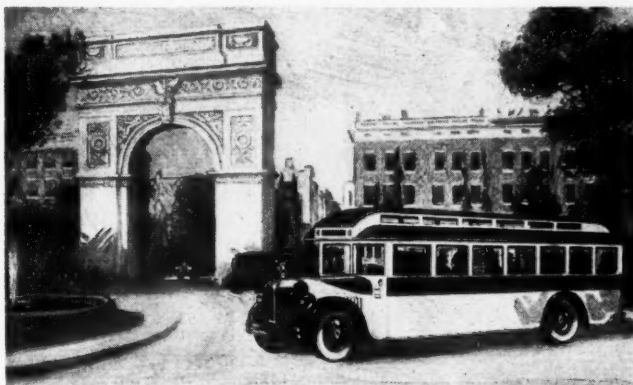
Needless to say, these long-distance through journeys appeal in most cases to people on pleasure bent, though business men utilize them extensively for intermediate stages. Up to 50 miles, time is often saved in traveling this way; for instance, there are a great many services of a "cross-country" character, and in competition with these there are frequently no express trains. It is not surprising, therefore, that the railroads have been forced to admit that they are being hit by the buses and that they are now all endeavoring to secure Parliamentary powers to run such services themselves; at present, they are allowed to run buses only as "feeders" of their lines. Incidentally the powers they are seeking include the operation of trucks to compete with the existing road transport contractors who, it is said, have "skimmed the cream" off freight traffic, leaving to the railroads only the least profitable classes of merchandise from the transport standpoint.

## Act is Before Commons

The act empowering the railroads to run buses and trucks independently of their rail systems has passed through its initial stage in the House of Commons, and an immediate result was a big appreciation in the market prices of the shares of the principal truck and bus manufacturers; a big demand for chassis has been anticipated when the sought-for powers are secured—and there is hardly a shadow of doubt that they will be afforded by Parliament before the end of the year.

At present, it may be of interest to American truck and bus manufacturers to note, there has been no suggestion that if the railroads are given permission to operate such vehicles they shall be held down to the purchase of British chassis.

The type of vehicle usually favored is the single deck 20-26 seater.



Looking out of Hyde Park through Marble Arch, London

# Dodge Methods *Simplify* Production of Flywheel Ring Gears

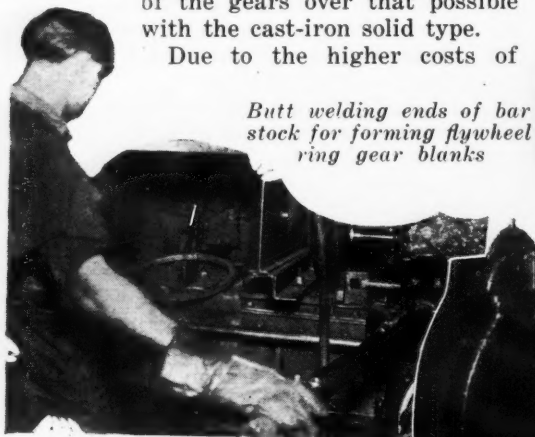
Flat bar carbon steel stock curved and then welded. Annealed for machining in electric furnace. Pass through lathes, hobbers and chamfering machines. Drop test used.

By A. F. Denham

UP to a few years ago it was common practice to machine starter ring gears on cast flywheels. Later some of the manufacturers of higher priced cars began to machine these gears separately from hardened steel and shrink them on the flywheels. This was done to increase the life of the gears over that possible with the cast-iron solid type.

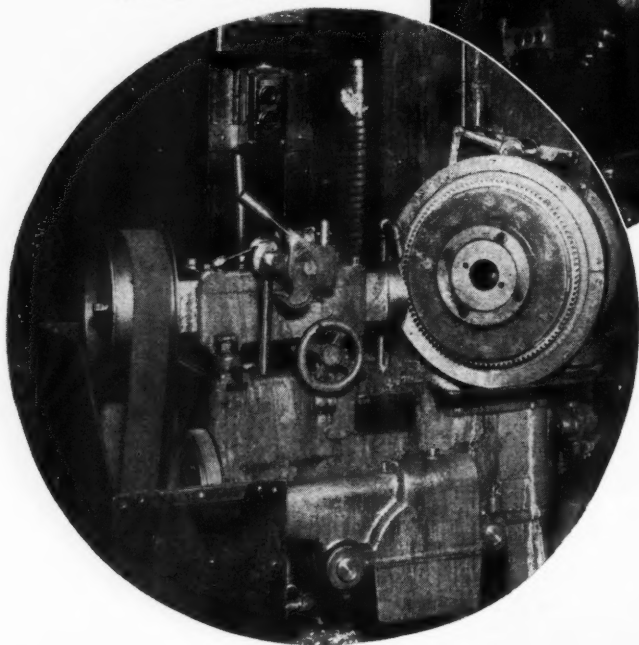
Due to the higher costs of

manufacture, however, it has not been until recently that this development has begun to appear in cars of lower price. Final adoption of this method by some manufacturers of cars in this group has come about only fairly



Butt welding ends of bar stock for forming flywheel ring gear blanks

Below—Chamfering of gear teeth on a W. C. Lipe chamfering machine



Fixtures are loaded with 12 rings each on a separate stand, the entire assembly then being placed in the hobber

recently, following the development of more rapid and economical methods of machining and mounting.

Among those to adopt the method of late is Dodge Brothers, Inc., in its complete line, including the Standard Six, its lowest priced car.

In the case of this company, flat bar carbon steel stock is used. This stock is cut to exact length in a press, and is then rolled to a ring between three rollers which give it the correct curvature. The next operation consists of preparing the ends of the ring for welding together. This is done by striking the ends in a press and flattening this part of the ring out slightly.



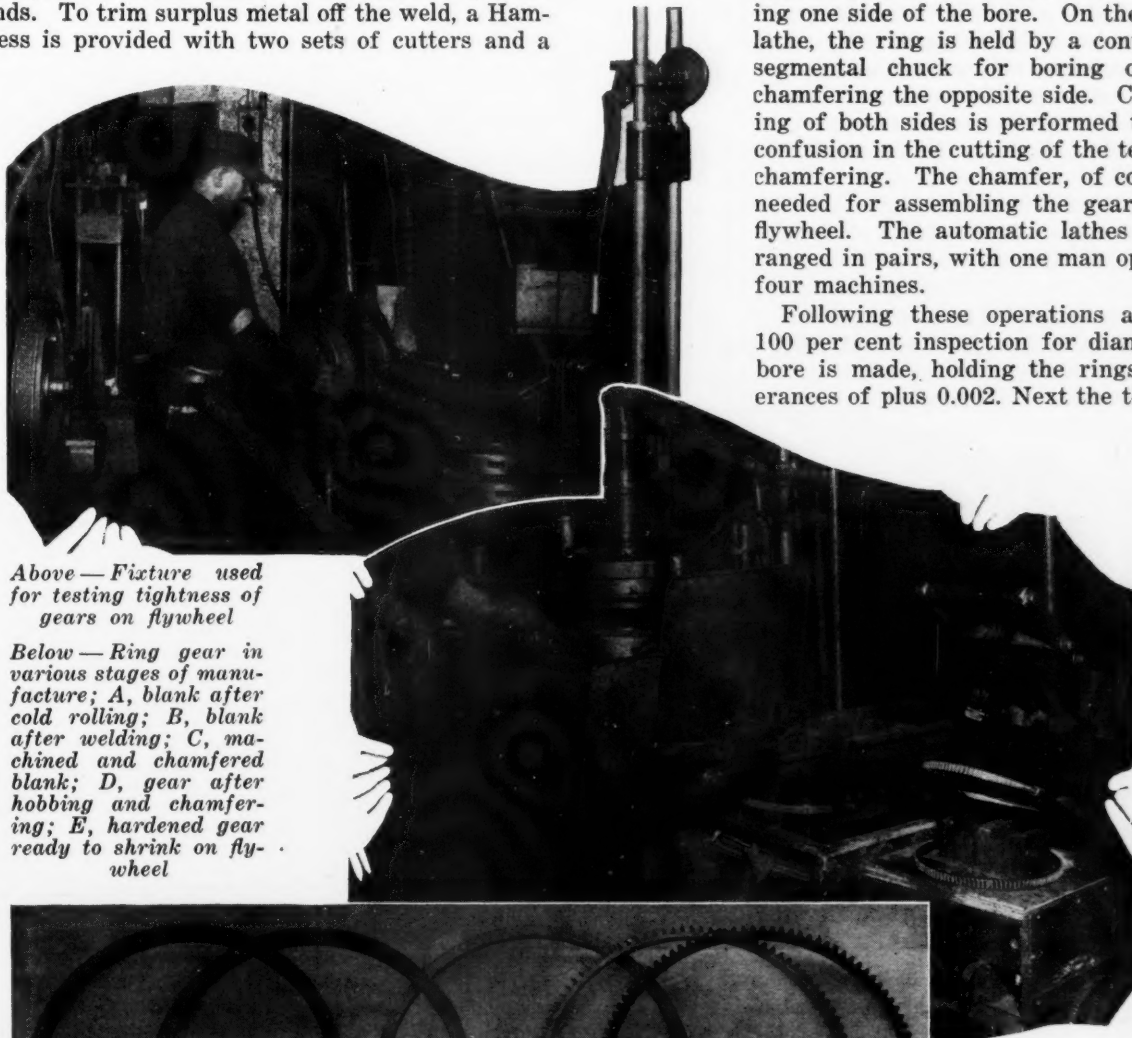
The ring is then placed in a Federal welder, provided with two electrodes which also form the clamping fixture. The ring is put in place and first one and then the other electrode is clamped down on either side of the split, at the same time, straightening the ends in the plane of the ring.

The welding operation itself is a combination arc and butt weld, the operator pulling a handle which forces the ends together after they have been heated by the arc welding. The entire operation is so rapid, however, that the operator could remove the welded ring with bare hands. To trim surplus metal off the weld, a Hamilton press is provided with two sets of cutters and a

turning them to the head of the machining line. The annealed rings are then placed on a fixture provided with 14 expanding segments which serve to restore roundness to the ring, at the same time checking the weld under tension. At this point 100 per cent snap inspection and hand straightening in the plane of the ring is performed.

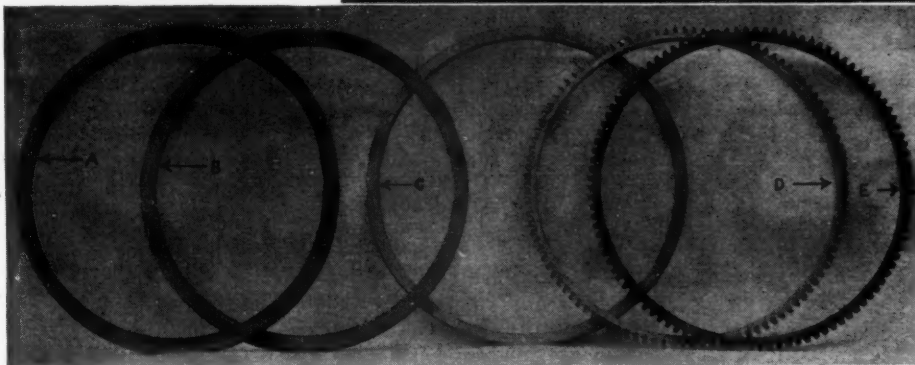
Next the rings go through two operations on Fay automatic lathes. In the first, the ring is held by an expanding chuck and the outside circumference, and both sides are machined, also chamfering one side of the bore. On the second lathe, the ring is held by a contracting segmental chuck for boring out and chamfering the opposite side. Chamfering of both sides is performed to avoid confusion in the cutting of the teeth and chamfering. The chamfer, of course, is needed for assembling the gear on the flywheel. The automatic lathes are arranged in pairs, with one man operating four machines.

Following these operations a second 100 per cent inspection for diameter of bore is made, holding the rings to tolerances of plus 0.002. Next the teeth are



Above—Fixture used for testing tightness of gears on flywheel

Below—Ring gear in various stages of manufacture; A, blank after cold rolling; B, blank after welding; C, machined and chamfered blank; D, gear after hobbing and chamfering; E, hardened gear ready to shrink on flywheel



Above—Induction heaters and presses used for shrinking gears onto flywheel

double locating fixture, so that all four sides can be trimmed off on the same machine in two operations.

Since the cold rolling and welding of the bar stock has a hardening effect, however, it is next necessary to anneal it for machining. For this purpose the rings are placed in stacks of eight in a Hagen electric furnace containing a rotating grid of nichrome steel. The furnace cycle brings the rings back to the removal door 24 minutes after being placed therein, at a temperature of 1600 deg. Fahr.

The heated rings are hung on a conveyor passing the furnace, which takes them out-of-doors for cooling, re-

cut on Gould & Eberhardt hobbors, 12 gears being cut at one time. To expedite this operation, the rings are loaded on the holding fixture on a separate stand, the entire fixture then being placed in the hobber, handled by means of pneumatic hoists and short overhead rails. About one hour is required for the hobbing operation on one set. Due to the considerable amount of cut in one operation, the position of the hob is changed after every other run to distribute the wear and use the full effectiveness of all cutting teeth. A special grinder in the tool room is provided for sharpening these hobs.

(Continued on page 813)

# Secret of Moving Used Cars Lies in Proper Reconditioning

*R. H. Grant, Chevrolet sales chief, says so-called problem arising from trade-ins is merely facing of an issue, and that second-hand vehicles have been an asset.*

By Lewis C. Dibble

IN the opinion of R. H. Grant, vice-president in charge of sales of the Chevrolet Motor Car Co., the used car isn't an insoluble problem. In a recent interview with the writer he declared that it wasn't a problem at all; that, properly handled, it was in many respects as asset to the industry, and that Chevrolet sales have climbed to a million a year largely because there are used cars to be taken in for new ones.

He pointed out that during the first quarter of the present year Chevrolet dealers had taken in and disposed of more than 200,000 used cars. At the same time they sold 250,000 new cars.

"The so-called used car problem," he says, "is merely the facing of an issue, and the recognition of the fact that we have used cars to sell and that to sell them we must provide the capital, the physical set-up and the manpower to handle the situation. The manufacturer must help the dealer.

"Today our used car stocks are being reduced in face of the fact that new car sales are increasing. Reconditioning has brought about this result. Dealers have come to realize that the secret of moving used car stocks is to recondition them and make them presentable for resale."

"Where the automobile dealer formerly paid little attention to used cars, the proportion of used car to new car sales has mounted so high that used cars are now an important part of his business. Today more than three-fourths of the

direct dealers in the Chevrolet organization have re-ducing equipment with which they finish cars exactly as is done at the factory. Cars are gone over by skilled mechanics trained in approved factory methods. The reconditioned car bears an 'OK' tag showing that every vital part has been checked and made right.

They are then displayed attractively, and convenient time payments are made available to the purchaser.

"The public owes directly to the used car the wide range of prices at which automobile transportation may now be purchased, and the wide variety of models from which the selection may be made. If there was no such thing as a trade-in allowance, the owner of an automobile, instead of turning it in on a new model, would drive it himself until its usefulness was spent, just as he now uses his furniture or his farm or garden implements. There would consequently be no used car mart for the man who wants to buy a car at less than new car cost. Millions of present motorists would be without the advantages of automobile ownership.

"Every good automobile today is built with many years of service in it. The original purchaser generally turns it in for a new model after he has driven it several years. There remains in the car many miles of unused service which is available at extremely low cost to the man who places a lower value on style than he does on economic transportation.

"Eliminate the used car from the market, and a good



R. H. Grant

## Used Car Aphorisms

AS EXPRESSED BY MR. GRANT

- "The used car problem is merely the facing of an issue.
- "Today our used car stocks are being reduced in the face of the fact that new car sales are increasing. Reconditioning has brought about this result.
- "Attractive display and time payments are other important sales factors.
- "The public owes directly to the used car the wide range of prices at which automobile transportation may now be purchased.
- "There would be fewer new car sales if there was no traffic in used cars.
- "The used car buyer of today is the new car buyer of tomorrow. We have trained our dealers to this viewpoint.



share of our motorists would be denied the advantage of automobile ownership. And many other motorists would be driving cars that do not measure up to their ideas of style simply because they would not be able to get a trade-in allowance, and would refuse to junk their cars with unused value remaining in them.

"There would have been a great many less new car sales within the past 20 years; and most of the twenty million present automobile owners would have either no car at all or a car that fell short of their taste for style, durability and performance.

"Our dealers know that the used car buyer of today is the new car buyer of tomorrow. They are anxious to satisfy him because it means future business. By reason of the unprecedented demand for new Chevrolet cars our dealers are stocked with a better variety of used cars than ever before—cars that are better serviced, better finished and that represent better values. There is every indication that our used car turnover this year will establish a new high record."

## International Air Lines

**A** MOVEMENT has been launched in Europe for the organization of international air traffic on new lines. The former French Under-Secretary for Air, Flandin, recently published in the periodical *L'Air* a proposal to place all long-distance lines under international control.

It is predicted that commercial air services over long distances will eventually prove unprofitable if each nation insists upon creating and maintaining its own fleets. It may be possible to carry out this program within the confines of a single country, though even that is contrary to the convention of Oct. 13, 1919, which assures equal treatment for the planes of all the signatory powers. Not all of the European nations joined this convention, but experience has shown that similar agreements between neighboring countries are absolutely essential. Thus air conventions have been entered into between France and Germany, France and Switzerland, etc.

As commercial air transport gains in importance it becomes ever more necessary for the individual countries to reach agreements which regulate their relations. The comparison with maritime navigation, often made, is entirely inappropos. The oceans belong to nobody and each nation can equip its fleets to cross them. But the atmosphere above a country is the property of that country. Any air route leading over a country not a signatory to the 1919 convention must be discontinued as soon as the nation in question withdraws its approval. Its approval, moreover, already constitutes an international agreement.

Aside from the juridical points of view there are commercial ones which require international agreement even more urgently than the former. An air service today is a difficult and expensive undertaking. It would be quite irrational if France, for instance, should try to maintain a purely French air service to the Far East. The only rational and economical plan is for each country to operate through a national company that part of the service falling within its own territory, so that the entire service is constituted by a series of independent services. The British have done a very creditable service by the establishment of the Egypt-Persian Gulf line. This line could be continued to India by the British, whereas the connection with the West, by way of Cairo, Benghazi, Trip-

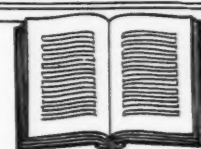
olis, Tunis, would have to be made by other nations, including Italy.

Quite recently an influential Dutch daily requested the Government of Holland to work together with other Governments interested in the Far East for the establishment of an air service from Amsterdam to the Sunda Islands. The Dutch realize that through international cooperation such a service could be established much quicker and with less outlay and less risk than if they were to attempt to establish an Amsterdam-Batavia line by themselves alone.

## New Acme Truck Models

**T**WO new 2-ton trucks, known as Models 340 and 346, have been added to the line of the Acme Motor Truck Co., Cadillac, Mich. These models are virtually twins with the exception of the engine. Model 340 is powered by a 4¼ by 4½ in. four-cylinder Continental engine developing 50 hp. at 2200 r.p.m., while Model 346 is equipped with a six-cylinder engine developing 60 hp. Powerplants are unit mounted with clutch and three-speed Brown-Lipe transmissions. Pressure feed oiling is employed for crankshaft bearings, connecting rod bearings, piston pins and timing gears. Ignition is by battery distributor. Radiators are polished cast aluminum with cellular core.

Power is transmitted to the rear through a two-piece, tubular propeller shaft equipped with three universal joints. The rear axle is full floating and of the bevel gear type, providing a final reduction of 61/6 to 1. The semi-elliptic alloy springs are 2½ by 38 in. front and 2½ by 54 in. rear. Four wheel internal brakes providing a total braking area of 644 sq. in. and propeller shaft hand brakes are standard on both models. Steering is through cam and lever gear and an 18-in. steering wheel. Wheels are Van metal spoke equipped with 32 by 6 in. pneumatic tires. The wheelbase is 156 in. and the turning radius approximately 20 feet. Standard equipment includes electric lights, starter, generator, electric horn, etc.



## Books for the Business Bookshelf

### Aircraft Engines

Dyke's Aircraft Engine Instructor. A. L. Dyke. The Goodheart-Willcox Co., Inc. Chicago. 372 pp. illus. \$5.

**T**HIS book deals with aircraft engines and their accessories, such as magnetoes, carburetors, etc., the idea being to familiarize the student, the mechanic and the public with the general principle of operation of the modern aircraft engine.

Very complete illustrated descriptions of design, operation and maintenance are given concerning Wright, Pratt & Whitney, Curtiss, Packard, Fairchild-Camenz and a number of older engines. Then follow chapters on magnetoes, carburetors, starters and generators, and aeronautic instruments and controls. All the information is made plain by diagrams and charts so that it should provide a very valuable manual to anyone interested in learning how an aircraft powerplant operates.

# Plant Managers Are Told *Every* Man Should be *Skilled* Worker

Advantages of educational courses for employees discussed at spring meeting of A.S.M.E. DuBrul talks on methods of determining depreciation of plants and tools.

By K. W. Stillman

DISCUSSIONS of industrial training and education featured the management sessions at the spring meeting of the American Society of Mechanical Engineers held in Pittsburgh last week. A number of papers on this general topic reviewed the progress in training and went into the many phases of the problem as it affects industry.

The Machine Shop Practice Division of the Society held one session at which Ernest F. DuBrul presented some very interesting thoughts on the methods commonly used in determining depreciation of plants and equipment. He suggested, in brief, that more consideration be given to the ever-changing purchasing power of the dollar in setting up reserves for depreciation. His paper will be discussed more fully in another issue.

Other items of interest to automotive men at the convention included a paper on the manufacture of seamless steel tubing, a review of the progress in the use of ball bearings in machine tool spindles by Thomas Barish, Marlin-Rockwell Corp.; a paper on the theory of the dynamic vibration absorber by two engineers of Westinghouse Electric & Mfg. Co., and a detailed description of the interesting materials handling and transport organization which has been developed at Westinghouse and which was described by C. A. Fike, supervisor of transportation at that company's East Pittsburgh plant.

A. C. Jewett, director, College of Industries, Carnegie Institute of Technology, in his paper on Industrial Cooperation in Education, pointed out that under modern industrial conditions there is really no place for the unskilled worker. A few years ago there were believed to be four general classes of workers—executive, skilled, semi-skilled and unskilled. These classifications are old-fashioned, however, and it should be the ambition of every industrial executive, Mr. Jewett said, to have only

skilled men on the payroll in his organization.

It has been conclusively proved that economy of operation demands skill even in the most ordinary of tasks. To illustrate his point, Mr. Jewett reminded his audience of how Taylor was able to increase by 300 or 400 per cent the production of men engaged in such a seemingly simple task as shoveling pig iron simply by instructing them in the proper way to do their work.

Some degree of skill is necessary to perform any task properly. The present distinction between the skilled and unskilled, Mr. Jewett suggested, lies in the number of skills a man has. An element of skill may be as simple as an elementary motion, but a tool maker, for example, requires many kinds of skill, e.g., skill in measurements, in manipulation of machines and in the use of many different tools. Combined with these various skills must be a proportionate amount of knowledge.

Granting that training will, in general, increase the effectiveness of a workman, Mr. Jewett suggests that

employers cooperate with the educational and training agencies already in existence to make them of more real value to the employees.

How this has been done in the Pittsburgh region was shown by several statistical studies. During the last school year 3800 students were enrolled in the evening classes of the Carnegie Institute alone, besides those enrolled in the other institutions, such as the University of Pittsburgh, Duquesne University and the Extension Department of Pennsylvania State College.

Practically all of these night school students come from the industries of Pittsburgh and there is ample evidence to show that their efficiency at their jobs is increased by the additional training they receive.

In a study made at Westinghouse of over 40 employees enrolled in the night schools of Carnegie Institute it was found that in relation to men engaged in

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A few years ago there was believed to be four general classes of workers—executives, skilled, semi-skilled and unskilled. These classifications are old-fashioned, however, and it should be the ambition of every industrial executive to have only skilled men in his organization.

It has been proved that economy of operation demands skill even in the most ordinary of tasks. Experience has shown that it is possible to increase by 300 or 400 per cent the production of men engaged in such a task as shoveling pig iron simply by instructing them in the proper way to do the work.



similar work in the plant, classified by ability or value to the company, 41 per cent of the students were in the top quarter, 55 per cent were in the middle half and only 4 per cent were in the bottom quarter. In other words, the night school students, instead of neglecting their work in the factory as some have supposed would be the case, actually were setting the pace for other men engaged in the same type of work.

Among the other advantages which Pittsburgh employers have found in a definite plan for providing educational facilities for their employees are, mental training leads to contentment and reduces labor turnover; an educational department functioning in the factory provides a way in which to transmit ideas to employees in a tactful way; labor problems are often settled better by education than by any other way.

While designed primarily to provide properly trained minor executives in a rapidly growing organization, the training plan employed by the American Rolling Mill Co., and described by A. J. Beatty, should have quite as beneficial results when applied to almost any organization.

#### How Candidates Are Selected

This training course is intended to provide raw material for sub-foremen, foremen and higher plant executives from what might be called the enlisted personnel of the organization. Candidates for the course are selected by the works manager or general superintendent, in cooperation with the superintendents of the various divisions where the men are employed. They are chosen by virtue of the characteristics they have displayed in their work which indicate a possibility of their handling better jobs. Ambition, interest in the work, intelligence, aggressiveness and ability to get along with others are among the more important characteristics sought in candidates.

The course of study for each student is prescribed by the operating division management and is carried on by a training department. Classes are formed when practicable but most of the instruction is an individual matter. The function of the course is to provide that special training needed by the students to enable them to succeed in positions of responsibility, the immediate goal being the next job ahead of the student.

There is also a course in foremanship which is a required subject for students enrolled in the operating training course and which is also open to foremen and others in the plant. Subjects discussed in this course are changed each year so that men are encouraged to continue in the school for a number of years. Detail programs are built around suggestions, made by a foreman's cabinet, which is a group of six to 10 of the leading foremen, concerning subjects which might prove of most value and interest at the time.

In general, the instruction is not given formally but rather by means of the conference method, as this has been found to arouse more interest and keep the interest at a higher pitch than when the usual schoolroom methods are used.

#### Training Engineers

F. L. Bishop, secretary, Society for the Promotion of Engineering Education, presented a paper on how to train and educate engineers, particularly after they have graduated from the usual educational institutions. Mr. Bishop employed both terms—training and education—and pointed out that they are different.

Training, he said, prepares a man to meet the present, while education prepares for the future. Although the two are distinct, they are closely related in prac-

tice since education involves training and training is a part of education.

Assuming that for most engineering students and most engineering schools the undergraduate course will continue to be of four years duration, Mr. Bishop said that the two most important problems involved in promoting engineering education are the continuation of the graduate's education in the years immediately following graduation while he is orienting himself to his profession and to select, prepare and develop younger teachers in the engineering schools.

There are so many ways in which the engineering graduate of today can fit into industrial life that it has become impracticable to attempt to prepare him for the detailed requirements of any one of his many possible jobs. Once he has made a decision as to just what work he is going to follow permanently he will immediately be in need of considerable more specialized knowledge concerning that work than he will have obtained at college.

In carrying on this work the same arrangements have been made among industries and educational institutions as have been made in the case of men lacking college degrees. In the Pittsburgh district the university has coordinated some of its post-graduate work with the educational program of Westinghouse. Certain Westinghouse engineers are given regular university appointments as lecturers which makes it possible for designated employees to register in the Graduate School and to receive resident university credit for work done within the walls of the industry under the guidance of practicing engineers.

Similar plans have been made between schools and industries in other sections of the country and the society of which Mr. Bishop is secretary is preparing a plan to submit to the national engineering societies to obtain more definite cooperation from them in furthering the cause of continued graduate education.

## Testing of Rubber Compound

THERE will soon be available a report by the physical testing committee of the rubber division of the American Chemical Society on the effects of temperature and humidity during the preparation and testing of rubber compounds. This report presents complete data and final conclusions based on an investigation conducted at the Bureau of Standards in accordance with a program drawn up by the physical testing committee.

A comprehensive study was made with five cures of five typical compounds, involving several thousand tests, in which the humidity, temperature, and periods of exposure were varied, both prior and subsequent to vulcanization. Photographs are included showing the apparatus used in conditioning the samples. Test methods are described in detail and the results are given in 52 tables and 98 charts.

Data obtained show that previous to vulcanization relative humidity has a pronounced effect upon the stress-strain relation, while that of temperature within the range studied is practically negligible. Differences due to relative humidity vary both in degree and kind with the ingredients used. Length of exposure of compounds has an appreciable effect. Subsequent to vulcanization, relative humidity has but slight effect, while that of temperature is pronounced. The effects due to temperature are not changed materially in the compounds studied by the compounding ingredients.

# Alloyed Iron and Steel Castings Discussed by Foundrymen

Subject much to the fore at A.F.A. convention in Philadelphia.  
Work on temperature measurements of molten cast iron  
is described. Exhibition of equipment is staged.

By P. M. Heldt

EVERY phase of foundry work was illuminated at the sessions of the American Foundrymen's Association convention held in Philadelphia last week. Some of the sessions were held at the Bellevue-Stratford Hotel, the official headquarters of the association, while others were held at the Commercial Museum, where the exhibition of foundry products and foundry requisites was staged.

Separate sessions were held for different groups of the association, the papers presented at each session dealing with related subjects. It was noteworthy that the idea of alloyed castings was very much to the fore in both the cast iron and the cast steel sessions.

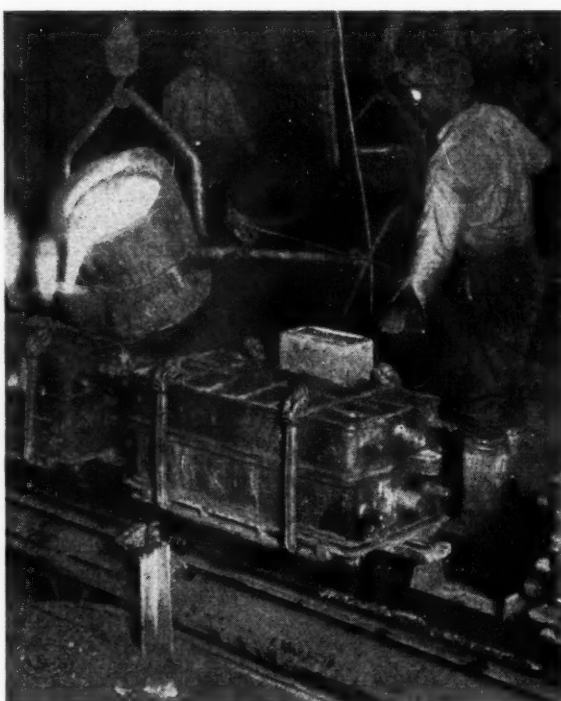
Some work on temperature measurements of molten cast iron has been done at the Bureau of Standards for the Sub-Committee on Cast Iron Research of the association and this was reported on in a paper by H. T. Wensel and W. F. Roeser of the Pyrometry Section of the Bureau.

It has been the experience of some foundries that optical pyrometer readings in the neighborhood of 1300 deg. C. are not reliable even for temperature control. In one large foundry, for instance, no trouble is encountered when pouring is done below 1320 deg. or above 1355 deg. C. apparent temperature, but around 1340 deg. pouring at the scheduled pyrometer reading does not always produce the same result.

## Corrections are Determined

At the request of the Research Committee the Bureau of Standards undertook to determine the corrections to be applied to optical pyrometer readings on molten cast iron, with particular reference to the constancy of these corrections at a given temperature. It was requested that nickel and nickel-chromium irons be included in the investigation, as particular difficulty had been encountered in making optical pyrometer readings on these.

Measurements of the true temperature with a ther-



mocouple and apparent temperature with an optical pyrometer on molten cast iron showed that the character of the surface undergoes a change in the neighborhood of 1375 deg. C. true temperature. Observations on streams and ladles in the Bureau of Standards foundry and in commercial plants all indicated that the uncorrected optical pyrometer reading is approximately 40 deg. C. lower than the true temperature below 1375 deg. C. when the bright, presumably oxidized, surface is observed. This corresponds to an emissivity of 0.7 in this region. Above this region the emissivity is approximately 0.4, corresponding to a correction of 110 deg. at 1400 deg. C. and 140 deg. at 1600 deg. C. true temperature.

The change in emissivity is attributed to the formation of iron oxide below 1375 deg. C. Above this temperature the difference between true and apparent temperature corresponds to the emissivity found for pure iron in the laboratory.

The Bureau of Standards also made an investigation of the heat loss from a 75-ton hot metal car used for transferring molten metal. The car had an external surface of 550 sq. ft. exclusive of a 3-ft. opening, and the heat loss was found to be 35.35 kilo-calories per second. When the car was filled with molten metal the cooling rate of the latter after the first few hours was at the rate of 6 deg. C. per hour, so that metal tapped at about 1500 deg. C. can be held for 40 hours before freezing. Incidentally it was found that the specific heat of molten pig iron at approximately 1350 deg. C. is 0.23. This is nearly twice as great as the specific heat given in engineering handbooks for cast iron at atmospheric temperature.

J. W. Frank, chief metallurgist of the Chicago Steel Foundry Co., who presented a paper on General Characteristics of Alloy Steel Castings, said there are three distinct classes of such castings. The first class comprises steel with high mechanical properties; the second steels with special properties, such as resist-



ance to corrosion and high magnetic permeability, and the third, alloys with special heat-resisting properties. These latter alloys are not properly classed as alloy steels but they are being widely used in heat-treating appliances, for which reason they were given consideration in the paper.

The first of the alloy steels were the manganese steels. Those with a low manganese content, 1-1½ per cent, formerly were not classed as alloy steels, but of late they have been heralded as a new alloy steel. Manganese steel of this analysis, when properly heat-treated, has excellent tensile strength and ductility, with very good resistance to abrasion. It has been extensively cast into caterpillar shoes, truck wheels, etc. The low cost of this alloy steel is its chief asset, and it cannot compare with others, such as nickel-chrome steel.

#### Hard Manganese Steel

Steel of 12-14 per cent manganese content is universally known and has its applications clearly defined. It stands alone in respect to hardness and impact wear. Owing to its extreme hardness it cannot be machined but must be ground to shape. Where machining cannot be eliminated, soft steel inserts must be used, being either pressed or cast into the larger castings. Castings for ball mills are made of high manganese steel.

Nickel manganese steels usually contain about 1 per cent nickel and 1 to 1½ per cent manganese. The usual carbon range is 0.30 to 0.40. While the use of nickel adds to the cost of steel, the increase in ductility and toughness justifies it. This metal also has a higher Brinell hardness than the straight manganese steel of low manganese content, which it replaces.

In the manganese-molybdenum steels the manganese is kept within the same limits, with the molybdenum at 0.20 to 0.40. On the whole about the same results are obtained as with nickel manganese steel, except that the elastic limit is somewhat raised.

It appears that all of the other alloying elements which are familiar in bar stock are used also in castings, including nickel, nickel-chromium, chromium, molybdenum and chromium-vanadium.

#### A Popular Alloy

Molybdenum in conjunction with chromium produces a steel the use of which is increasing by leaps and bounds. The uncertainty of results that has been troublesome in the past, has been entirely eliminated with improved methods of adding the molybdenum. The outstanding effect of the molybdenum is the unusually high elastic ratio, with high tensile strength and good ductility. The advantage of this steel over chrome-nickel is the ease with which it can be machined. In practice it has been shown that, at the same Brinell hardness, a considerable saving can be made in the average time of each machine shop operation. The drawing temperatures of this steel are unusually high and it is less susceptible to overheating. Molybdenum is almost always kept within 0.20 to 0.40 and chrome 0.70 to 1.10. Carbon is usually 0.20 to 1.00 for the general run of work.

Nickel-chrome-molybdenum steel, according to Mr. Frank, is the ideal metal for cast die blocks. These are steadily displacing forgings, due to the heavy expense of sinking the die into a solid block. They can also be resunk very cheaply, as they can be remachined without annealing. With low carbon, about 0.30 and higher nickel and chrome, a steel of very high ductility and elastic limit is obtained.

W. C. Hamilton, research director of the American Steel Foundries, Indiana Harbor, Ind., described the newly installed research laboratory of that concern. The laboratory contains furnaces, equipment for making mechanical tests, metallographic apparatus, a chemical laboratory, etc. The prime object of this laboratory is to obtain facts concerning steel for castings and its heat treatment. Mr. Hamilton said the work so far had demonstrated very emphatically the necessity of such a procedure, and there was no dull period in prospect for the laboratory.

D. G. Anderson and G. R. Bessmer, foundry engineers of the Western Electric Co., had made some experiments on cast iron by varying the carbon and silicon contents. The possibilities in the way of improving cast iron were made apparent by the appearance of the recently developed pearlitic cast iron and the high-test cast iron. One, however, is produced with considerable increase in cost and the other at the expense of machinability. The improved properties of these irons are mainly the result of a reduced carbon content and the experiments conducted by the authors were also in the direction of lessening the carbon content.

Three silicon contents were experimented with, viz., 1.10, 2.00 and 2.20 per cent. The results were shown in the form of graphs, one for each silicon content, in which the tensile strength, transverse strength and combined carbon were plotted against the total carbon.

#### Increase in Hardness

With 1.10 per cent silicon, as the total carbon drops below 3.40 per cent there is a very rapid increase in the combined carbon and a resulting increase in hardness and tensile strength. With 2.00 per cent silicon there is no appreciable increase in combined carbon until the total carbon is reduced to less than 2.60 per cent. When the combined carbon increases the tensile and transverse strengths also increase. With 2.20 per cent silicon there is practically no increase in combined carbon until the total carbon drops below 2.50 per cent. The graph corresponding to this silicon content shows that the beneficial effects of reducing the carbon are not as pronounced as with a 2.00 per cent silicon content.

Photo-micrographs showed that as the carbon content is reduced the free carbon formation is changed from flakes to round shapes, making the structure of the iron proper stronger, which is substantiated by the physical test.

Quite a number of the papers dealt with malleable iron. L. E. Gilmore of the Crane Co., Chicago, pointed out that ordinary commercial malleable consists of six elements, namely, iron, phosphorus, manganese, sulphur, silicon and carbon. Other elements may be present by accident, or they may be added purposely to produce or accentuate a particular effect.

Phosphorus usually is present in amounts of between 0.10 and 0.20 per cent. Up to 0.25 per cent it is completely soluble in the ferrite of the finished product and has no effect on the graphitization, but a direct effect on the physical properties, strengthening the metal without reducing its ductility. Above about 0.25 per cent, the exact point depending upon the carbon content, some of the phosphorus is in the form of free phosphides which produce brittleness.

The chief function of manganese in malleable iron is to combine all the sulphur present in the form of manganese sulphide.

A paper by Glenn O. Carter, consulting engineer of the Linde Air Products Co., dealt with economies in oxy-acetylene cutting in riser removal.

# Accidents Continue to Decrease in Automotive Plants

Frequency and severity rates are both lower in 1927 than in previous years and are well below the average for all industries. Report is issued by Safety Council.

**A** REPORT just issued by the National Safety Council covering the industrial accident experience of its members for 1927 gives conclusive proof that safety campaigns are beneficial and that the automotive industry is well up in the front rank of safety.

Of 15 general industries, whose figures are segregated in the report, only five have lower accident frequency rates than the automotive industry and only four have lower accident severity rates.

The average accident frequency rate for all indus-

tries reporting in 1927 was 25.95 while that of the automotive industry was 21.51, which may be compared with similar figures for the industry for 1926 and 1925 of 23.60 and 23.42 to indicate that improvement is still being made.

In the matter of accident severity the same trend is evident. The average rate for our industry in 1927 was 1.01, which compares with the average for all industries of 1.88 and for the 1926 and 1925 rates for the automotive industry of 1.37 and 1.06 respectively.

These figures for the automotive industry have been

## Accidents—Grand Total—Automotive Plants

Year	Average Number of Employees	Total Hours Worked 000 omitted	Number of Lost Time Accidents				Number of Days Lost				Rates		No. of Plants
			Death	Disability		Total	Death	Disability		Total	Fre- quency	Sever- ity	
				Per- manent	Tem- porary			Per- manent	Tem- porary				
1927	206,014	368,267	15	303	7,604	7,922	90,000	157,002	124,011	371,013	21.51	1.01	119
1926	183,911	426,775	29	484	9,554	10,067	174,000	267,288	142,879	584,167	23.60	1.37	98
1925	304,639	762,565	22	560	17,279	17,861	132,000	245,262	405,730	810,610	23.42	1.06	196
1924	254,069	577,346	8	103	2,265	12,430	48,000	60,288	22,602	746,340	21.53	1.29	150
1923	186,564	459,631	5	138	4,451	13,723	30,000	97,905	45,183	525,050	29.86	1.12	102
1922	91,734	219,023			4,410	4,410				193,858	20.14	.89	25
6 Years	1,226,931	2,813,607	76	1,588	45,563	66,413	474,000	827,745	740,405	3,231,038	23.60	1.15	690

## Automobile and Engine Manufacturers

Year	Average Number of Employees	Total Hours Worked 000 omitted	Number of Lost Time Accidents				Number of Days Lost				Rates		Key No.
			Death	Disability		Total All Causes	Death	Disability		Total All Causes	Fre- quency	Sever- ity	
				Per- manent	Tem- porary			Per- manent	Tem- porary				
1927	159,737	245,737	8	196	4,953	5,157	48,000	86,733	83,833	218,566	20.99	.89	39
1926	101,634	225,915	18	325	5,601	5,944	108,000	175,427	90,234	373,661	26.31	1.65	42

## Automobile Parts Manufacturing

Divisional Totals and Averages												Estab-lishments	
Year 1927	31,290	86,249,223	6	76	1,938	2,020	36,000	51,189	31,435	118,624	23.42	1.38	36
Year 1926	30,335	72,529,596	4	80	2,178	2,262	24,000	39,021	22,783	85,801	31.19	1.18	29
2 Years	61,625	158,778,819	10	156	4,116	4,282	60,000	90,210	54,218	204,428	26.97	1.29	65

## Machine Shops (Manufacturing Small and Light Weight Machine Products)

Divisional Totals and Averages												Estab-lishments	
Year 1927	15,087	36,279,953	1	31	713	745	6,000	19,080	8,743	33,823	20.53	.93	44
Year 1926	51,942	128,330,827	7	79	1,775	1,861	42,000	52,840	29,862	124,702	14.50	.97	27
2 Years	67,029	164,610,780	8	110	2,488	2,606	48,000	71,920	38,605	158,525	15.83	.96	71

## Tires

Divisional Totals and Averages												Estab-lishments	
Year 1927	41,240	90,625,346	6	35	4,370	4,411	36,000	20,631	54,747	111,378	48.67	1.23	16
Year 1926	49,351	108,284,006	6	52	4,365	4,423	36,000	38,499	56,271	130,770	40.85	1.21	12
2 Years	90,591	198,909,352	12	87	8,735	8,834	72,000	59,130	111,018	242,148	44.41	1.22	28



## 1927 Accident Statistics—All Industries

Establishments Reported	Section	1 Average Number of Employees	2 Total Hours Worked	3 Number of Lost Time Accidents				4 Number of Days Lost				Rates			
				Death	Disability		Total all Causes	Death	Disability		Total all Causes	1927		1926	
					Per- manent	Tem- porary			Per- manent	Tem- porary		Fre- quency	Severity	Fre- quency	Severity
A	B	C	D	A	B	C	D								
119	Automotive.....	206,014	368,266,051	15	303	7,604	7,922	90,000	157,002	124,011	371,013	21.51	1.01	23.60	1.37
*	Cement.....			*									*	23.44	3.97
65	Construction.....	28,713	59,707,836	39	97	3,749	3,885	288,000	78,564	59,360	425,924	65.07	7.13	57.70	5.44
143	Chemical.....	97,744	254,044,870	47	155	4,162	4,364	282,000	129,321	71,530	482,851	17.18	1.90	18.26	2.28
121	Food.....	36,786	97,394,523	11	60	1,867	1,938	66,000	34,691	32,242	132,933	19.90	1.36	23.60	1.40
450	Metals.....	326,362	818,618,172	104	744	20,916	21,764	624,000	534,153	357,752	1,515,905	26.59	1.85	35.45	2.44
*	Mining.....			*								*		76.98	8.47
28	Packers and Tanners.....	13,858	33,797,058	1	29	1,505	1,535	6,000	10,799	16,915	33,714	45.42	1.00	58.88	1.75
186	Paper and Pulp.....	64,283	185,369,903	27	63	4,994	5,084	162,000	62,372	67,154	291,526	27.42	1.57	36.77	1.95
22	Petroleum.....	188,572	221,429,795	57	243	6,597	6,897	342,000	135,142	108,578	585,720	31.15	2.65	29.23	2.47
195	Power Press.....	206,193	448,077,831	14	439	8,264	8,717	84,000	222,654	108,178	414,832	19.45	.93	24.23	1.39
319	Public Utilities.....	221,877	551,508,448	237	124	16,207	16,568	1,422,000	174,832	224,323	1,821,155	30.04	3.30	33.77	4.32
31	Quarry.....	6,027	15,523,605	9	15	810	834	54,000	14,600	12,349	80,949	53.72	5.21	57.01	7.04
41	Rubber.....	65,541	151,238,667	8	48	5,753	5,809	48,000	31,281	71,304	150,585	38.41	1.00	30.09	1.17
86	Textile.....	59,496	140,213,047	3	47	1,699	1,749	18,000	36,086	20,679	74,765	12.47	.53	13.13	.64
167	Woodworking.....	44,719	111,238,505	17	143	5,143	5,303	102,000	81,327	64,056	247,383	47.67	2.22	62.05	4.51
63	Miscellaneous Industries.....	21,404	52,444,274	.....	3	608	611	.....	2,400	7,788	10,188	11.65	.19	*	*
53	Too late to classify.....	78,158	233,532,396	33	333	3,782	4,148	198,000	145,791	58,641	402,432	.....	.....	.....	.....
2089	1927 Totals and Averages.....	1,565,747	3,742,404,981	622	2,846	93,660	97,128	3,786,000	1,851,015	1,404,860	7,041,875	25.95	1.88	.....	.....
1725	1926 Totals and Averages.....	1,221,094	3,033,416,031	687	2,806	93,185	96,678	4,122,000	1,907,207	1,559,645	7,588,852	.....	.....	31.87	2.50
1231	1925 Totals and Averages.....	828,028	2,429,984,048	405	1,904	70,112	74,367	2,430,000	1,158,046	1,163,121	4,917,850	.....	.....	.....	.....
5045	Grand Totals and Averages (3 Years).....	3,614,869	9,205,805,060	1,714	7,556	256,957	268,173	10,338,000	4,916,268	4,127,626	19,548,577	29.13	2.12	\$31.31	\$2.20

§2 years average.

†More than total of Cols. A, B and C, as some plants report "total" only.

†Estimated.

\*Not available.

compiled from the experiences of 119 automotive plants employing an average of 206,014 employees who worked a total of 368,266,051 hours during the year. Only 15 deaths resulted from industrial accidents in these 119 plants while 303 accidents resulted in permanent disability.

Of the 119 establishments, 64, or 54 per cent of the total, have accident frequency rates below the average and 81 establishments, or 68 per cent of the total, have severity rates below the average.

During 1927 the ratio of persons employed to the lost time accidents was 26 to 1. The average days lost per injury was 47. The ratio of non-fatal to fatal accidents was 527 to 1 while eight establishments completed 1927 without a single lost time injury.

The 119 automotive establishments were divided among 39 making automobiles and engines, 36 making parts and accessories and 44 machine shops making small and lightweight machine products for automotive use.

Accident frequency rates in the 39 automobile and engine-making plants ranged from 8.47 to 208.69, the latter being a considerable jump over the next to the last rate of 78.41. The average for all 30 plants was 20.99, somewhat less than the average rate for all automotive plants.

The accompanying tables give summaries of the automotive information contained in the report.

**M**ANUFACTURERS of Birmingham and the Midlands of England are being interested in a scheme for the construction of a motor roadway from the Midlands to the coast. It is pointed out that unless improved transportation is offered it is only a matter of time till the industries located in the Midlands will be unable to compete with those near the ports and will have to remove to similarly favorable locations. The two alternatives for improving transport conditions are the improvement of the present waterways, so they can accommodate barges of increased size, and the construction of motorways. The promoters of the latter scheme claim that it would offer quicker and cheaper

means of transportation than now available. They point out that with suitable roads the double journey could be made in half the time required for the single journey under present conditions. Gradients would be cut down to a minimum and turns given a large radius in order to make high speeds possible and to reduce running costs.

## Flywheel Ring Gears

(Continued from page 805)

Following the hobbing operation the gear teeth are chamfered on a W. C. Lipe chamfering machine, the cutter being of the rotary six-blade type, while indexing is by means of a master gear.

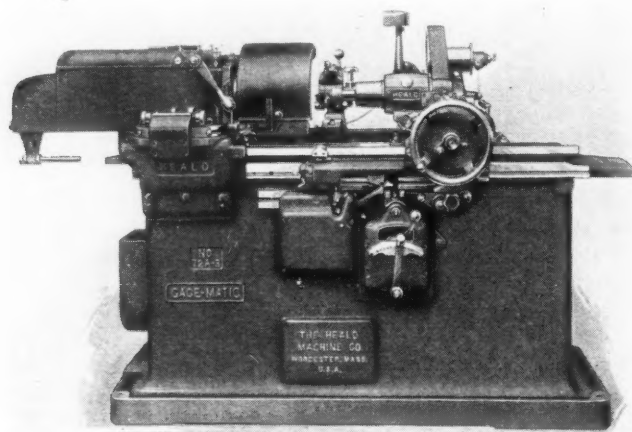
The finished gears are then passed through a rotary automatic electric furnace to raise them to the correct temperature for hardening, after which they are quenched in oil. Following a pickling operation, the gears are heated for 48 seconds, two at a time, in "Calorac" induction heaters provided with automatic kick out. These heaters are rather unique in that the heating effect is obtained entirely through the current induced in the gears, these being placed in a strong electrical field. The heater itself stays cool, being insulated from the gears with sheets of asbestos. Following this operation gears are immediately passed onto the flywheel, at the same time being cooled by a soap compound. A resizing of the flywheel center hole is then necessary due to the form changes incurred through the cooling of the steel ring.

To test the fit of the gear, a chalk mark is drawn across the face of the gear and flywheel, and the assembly placed in a fixture, locking the flywheel in place, the gear teeth fitting into internal teeth on the other half of the fixture. The latter has attached to it a beam on which a weight is dropped from a predetermined height giving an impact load equivalent to 10 tons. Lack of tightness of fit will be indicated by shifting of the chalk mark. Rejected gears are removed from flywheel on an arbor press.

# NEW DEVELOPMENTS—Automotive

## Heald Gage-Matic

THE Heald Machine Co., Worcester, Mass., has developed a new Gage-Matic internal grinding machine which is a companion machine to the former Size-Matics but which employs the Teromatic sizing principle. The Teromatic sizing method, based on the

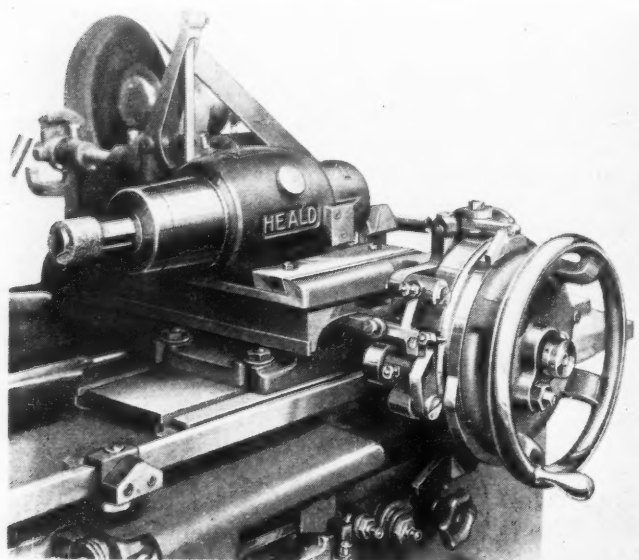


Front view of Heald Gage-Matic internal grinding machine

McDonough positive gaging device patents, was formerly used on the Giddings & Lewis line of internal grinders, the rights to which were purchased by the Heald Machine Co. last fall.

The actual gaging device used on the Gage-Matic differs from that employed in the Teromatic machines in that a single disk is used to control the sizing, thus permitting the grinding of fairly short work. The control for short stroking the table at the proper time to enable the wheel to be trued is on the cross slide as in the Size-Matics, where a single electrical contact point performs this operation.

The cycle of operation in the Gage-Matic is fully



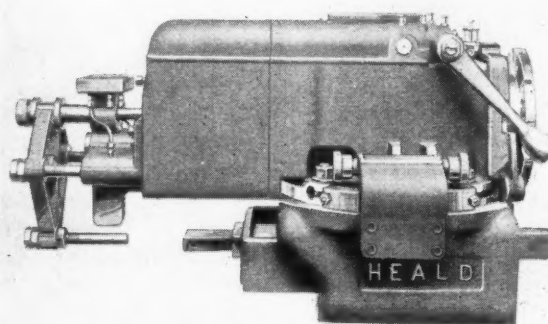
Cross slide of the new Heald Gage-Matic grinder

automatic. Once the work has been chucked and the starting lever thrown over, the various operations follow automatically until the finished, sized piece is presented in a stopped machine for unchucking. The wheel enters the work at rough grinding feed and speed until a predetermined amount of stock is left, when a contact is made on the cross slide, the table strokes changes to truing speed, the diamond drops into position and the wheel is trued. The wheel again enters the work, this time at finishing speed and feed, and grinds until the gaging plug enters the hole when a second electric contact is made which causes the wheel to leave the work and the machine to come to rest.

The work spindle is 9½ in. diameter and runs in self-adjusting radial ball bearings. The size gage mechanism consists of a gage mounted on one end of a rod revolving with the work spindle and operating with it in such a manner that as the front end of the wheel clears the back of the hole the gage is firmly pressed against the piece at this point. If the gage can enter the hole an electric contact is made which stops the machine.

The cross slide is mounted on the table and wheel feed and truing operations are controlled there.

For use continuously on work with holes of about the same size, but one workhead speed is necessary and it is driven by a belt from the rear shaft. For other conditions two and three motor drives are available.



Workhead detail of Heald Gage-Matic

Various size wheelheads can be furnished to obtain the proper size spindle for each job.

The main table travels on a flat and a V-way which are lubricated by a pressure feed system. Hydraulic drive is employed for the table. The stroke of the table is controlled by three adjustable dogs, two of which are set for the grinding stroke and the third for permitting the table to be withdrawn for truing the wheel.

The wheel truing device is hydraulically operated and trues the wheel just before the finish size is reached. The operation is controlled by a cam on the table. A micrometer adjustment permits minute movements of the diamonds in tenths of thousandths.

## Tinnerman Speed Nut

THE Tinnerman speed nut combines the functions of a nut and a lock washer and can be used with any standard bolt. The nut is made of high-carbon



# Parts, Accessories and Production Tools

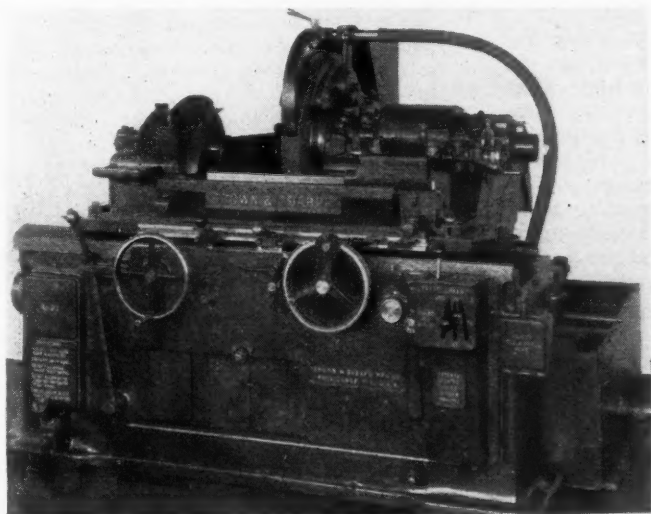
strip steel, heat treated. It is formed into a low arch shape, and two strong prongs are stamped up in the center. The edges of these prongs are stamped out to fit the pitch of the bolt thread. The nut is applied by simply pressing it down over the bolt, the prongs slipping easily over the threads. Then a few turns of a screw-driver or wrench on the bolt cause the nut to flatten out and the prongs to press into the bolt, locking it.

It is claimed for these nuts that vibration or strain cannot cause them to work loose, as they flex with the movement of the metal; that there is no possibility of threads being crossed and spoiled, and that a perfect thread is not required on the bolt. No wrench is required to hold the nut from turning.

They can be used close to shoulders on narrow flanges, thus permitting quick and convenient assembly where it is difficult to use the usual threaded nut. These nuts are used for automotive and other parts and are specially recommended for use on enameled, lacquered or painted pieces, as bolting together can be accomplished without cracking or chipping the surfaces.

## Plain Grinding Machines

**B**BROWN & SHARPE MFG. CO., Providence, R. I., has developed an entirely new series of plain grinding machines designed for production work to provide



*No. 30 plain grinding machine with belt drive*

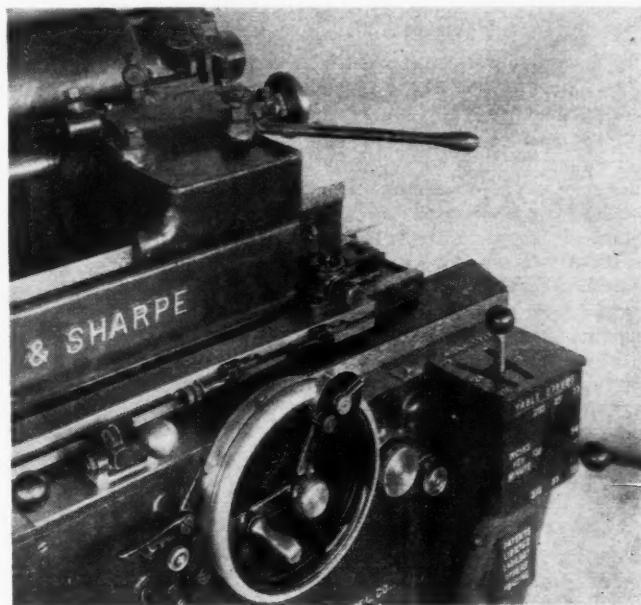
smooth and efficient operation, great speed and complete control of all movements.

Three sizes are available, all similar in design except for length of bed. They are designated the Nos. 30, 32 and 33 plain grinding machines. They take 18, 36 and 48 in. lengths respectively between centers and will swing 12 in. with 24 in. wheels having faces from 2 to 10 in., and 6 in. diameters with 30 in. wheels having faces from 2 to 6 in.

A table dwell is provided at each end of the traverse, which with a shock absorber in the reversing mechanism

permits high speeds to be used without affecting the finish of the work.

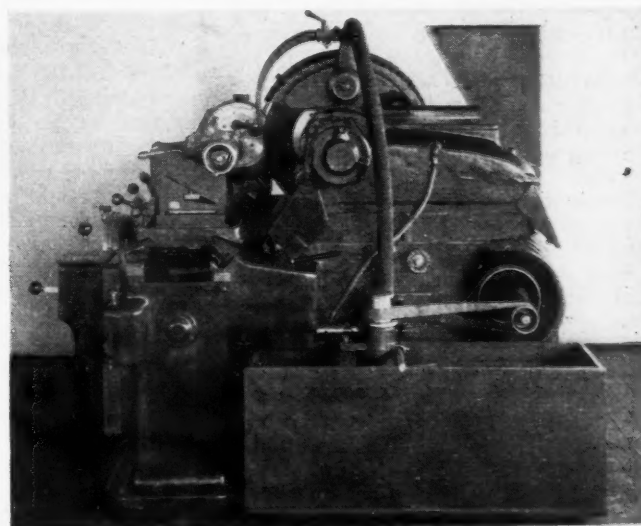
All control levers are grouped at the normal operating position. Changes in speed of the independent work



*Control mechanisms are grouped to facilitate operation*

drive and table movement are made through sliding gears by individual levers. The wheel slide and its base have long automatically lubricated ways. The bed is long enough to support the table at all points in its travel. Lubrication of the wheel spindle and all main mechanisms is by gravity flow from a reservoir kept filled by a geared pump.

Either overhead countershaft or direct motor drive can be furnished. From 15 to 40 hp. are required depending upon the work.



*Details of the right end showing rigid wheel stand support*

# AUTOMOTIVE **NEWS SECTION** INDUSTRIES

Philadelphia, Pennsylvania

May 26, 1928

## Factory Earnings on Level With Increased Operations

PHILADELPHIA, May 26—From the manufacturers' standpoint the automotive situation must be considered eminently favorable. Sales have been on a high level in both domestic and foreign markets, and profits have been on a comparable basis. Although price competition has been keen, adequate margins have been maintained by most of the producing companies.

Two factors have been singled out by commentators as evidence that the industry is not operating as actively as might have been expected earlier in the year. It is pointed out that production is below the record year of 1926; yet the fact is that if Ford were able to come close to meeting orders for his product the previous records would have been exceeded, and without, it is likely, seriously affecting the business of the other companies.

It is also remarked that production began to taper off earlier in the season than the averages over a number of years would show to be the normal trend. As against this, men in the industry point out that the producing companies are able to swing into quantity output on new models earlier in the season than was the case a short time ago. Model changeovers take less time than ever before and this enables an earlier stocking of dealers than was formerly possible.

Consequently, it is held, the logical expectancy would be that the peak in production would precede the peak in retail sales. Car shortages in dealers' hands are now of rarer occurrence.

### Conference Tax Action Expected Late This Week

WASHINGTON, May 24—The tax reduction bill eliminating the 3 per cent excise tax on automobiles, is still under conference but it is expected that the conferees will pass on the measure, and that it will go to the President for signature this week or early next week, in which event adjournment of Congress is to be expected immediately.

Under the Senate and House rules, the conferees may not disturb the provisions for the elimination of the automotive excise tax because of the fact that both the Senate and the House have voted for its complete repeal. Insofar as the automotive tax is concerned, the only thing to be considered by the conferees is the floor tax.

The Senate measure provides for a rebate of 3 per cent, while the measure as it passed the House, through an oversight, provided that the dealers could apply and obtain a refund of 1½ per cent on the floor tax.

## Oil Burning Engine for Planes Developed

WASHINGTON, May 24—After five years of experimental work, a heavy-oil fuel engine for airplanes, weighing less than three pounds per horsepower has been developed and designed at the Langley Field, Va., laboratories of the national advisory committee on aeronautics, it became known at the third annual aircraft engineering research conference at Langley Field this week.

A one-cylinder model of the engine, in fact, was demonstrated to commercial engineers attending the research conference and it was definitely stated that experiments have advanced to the point now to warrant construction of multi-cylindrical engines for actual use in aircraft.

Among the outstanding features of the engine, according to experts in charge of the laboratories, is the fact that it does away with ignition and carburetion, the fuel being sprayed into the cylinders under high pressure and ignited by the heat in the highly compressed air charge. The engine, in addition, it was explained, eliminates fire hazard attendant upon the use of gasoline as a fuel, the fuel supply being capable in this new motor of extinguishing a flame unless raised to a very high temperature.

### Lindbergh Joins Air Transport

NEW YORK, May 23—Col. Charles A. Lindbergh has accepted the post of chairman of the technical committee of the Transcontinental Air Transport, Inc., according to an announcement made by J. Cheever Cowdin, a director of this enterprise. In this capacity, Colonel Lindbergh will have charge of the choice of all flying equipment, fields, flying routes and safety appliances.

### Wright Building 100 Monthly

NEW YORK, May 19—Production of the Wright Aeronautical Corp. has been increased during the last year and a half from 30 to about 100 engines a month, according to a letter to stockholders signed by Charles L. Lawrence, president. This output will be increased as additional facilities become available.

### Ferry Succeeds Joy as Packard Treasurer

DETROIT, May 24—Richard P. Joy has retired as treasurer of Packard Motor Car Co. and is succeeded by H. J. Ferry, who has been assistant treasurer since 1919. Mr. Joy was one of the small group of Detroit men who formed the Packard company to manufacture the Packard car in Detroit after it had been built at Warren, Ohio, for a time. He is president of the National Bank of Commerce, Detroit, which recently merged with the Union Trust Co. He continues as a director of Packard.

### British Demand Reported Taxing Plant Capacity

WASHINGTON, May 24—Despite adverse weather conditions the automotive industry in England showed improvement during April, according to a cable from the British capital to the Department of Commerce.

Automobile manufacturers in England report an increase in business to such an extent that it is difficult to meet demand for the most popular models and makes. Lightweight cars were best sellers, but sedans of larger size also enjoyed good demand. During the next three months demand for larger type of model is expected to increase.

### German Merger Reported to Unite Leading Plants

PHILADELPHIA, May 24—Report of a combination of German automobile companies under Joseph Schapiro, who holds large stock interests in the Daimler, Gothaer and Neckarsulmer companies, has been received here. Furthermore, it is reported that the Deutsche Bank, which two years ago accomplished the fusion of the Benz and Daimler corporations, is interested in the proposed trust.

### Erskine Cabriolet \$845

SOUTH BEND, May 24—Studebaker Corp. of America has introduced an Erskine cabriolet listing at \$845. The top is of khaki fabric with rigid landau irons. The rear section of the top can be unfastened and buttoned flat against the ceiling.

### Moon Adds Standard Roadster

ST. LOUIS, May 24—Moon Motor Car Co. has added a new standard roadster on the 6-72 chassis which is listed at \$1,295. Three color combinations are available.



## Tire Companies Join in Rubber Institute

### New Organization Will Seek Stability by Eliminating Unfair Practices

NEW YORK, May 24—The Rubber Institute has been formed by 12 leading rubber goods manufacturers to put the industry on a sound, economic basis, to adopt a code of trade ethics, and to use conscientiously, legal, cooperative methods of sound merchandising. General Lincoln C. Andrews, formerly assistant secretary of the treasury, has been named director general and a first meeting will be held here June 1 at the Plaza Hotel. Headquarters will be opened in New York following the filing of incorporation papers.

#### Will Deal With Merchandising

In a statement accompanying the announcement of the institute, General Andrews said that unrestricted competition and economic conditions of today had brought about unfair competition in all industries. The stability of the rubber industry had been upset, he said, by price-cutting and price concessions. The institute will have no bearing on the Stevenson Act now abandoned, and will have nothing to do with purchasing, but will deal with handling the manufactured product. He said the institute does not expect to bring about lower prices for rubber but to aid in stabilizing them.

While every rubber goods manufacturer in the United States is to be asked to become a member of the institute, those concerns which now comprise the organization are the Ajax Rubber Company, Dunlop Tire and Rubber Company, Firestone Tire and Rubber Company, The Fisk Rubber Company, B. F. Goodrich Rubber Company, Goodyear Tire and Rubber Company, Inc., Kelly-Springfield Tire Company, Manhattan Rubber Company, Miller Rubber Company, Seiberling Rubber Company, United States Rubber Company, and the Hood Rubber Company.

#### No Unfair Discrimination

"The members of the institute," said General Andrews, "subscribe without reservation to several underlying principles governing their respective, individual, trade practices on which will be based the code of ethics to be formulated. These principles provide that there shall be no unfair discrimination between customers, and that all sales of rubber products shall be based upon prices and terms publicly announced and strictly adhered to.

"It will be my purpose and the function of the institute to provide for intelligent, individual business management, operating independently, an opportunity to do business at a fair profit and on a basis of wholesome competition, and to see that the industry

conducts itself entirely within the law, eliminates unfair trade practices and provides a maximum of service both to the industry and to the public."

The institute will be similar, in the rubber industry, to the Cotton Textile Institute in the cotton industry and to organizations of that kind in the sugar, wool and alcohol industries. The institute, General Andrews explained, will be wholly independent of the Rubber Association of America, but will act cooperatively.

## Tire Output Value Declines in Quarter

NEW YORK, May 22—Tire production during the first quarter of the current year reached a value of \$179,615,000 as compared with \$187,650,000 for the corresponding quarter of 1927, and with \$162,333,000 for the quarter immediately preceding, according to statistics compiled by the Rubber Association of America, Inc.

Crude rubber consumed for tires and tire sundries during the period was 80,871 tons as compared with 78,577 tons in the first quarter of 1927, and with 60,592 tons for the fourth quarter of 1927.

Crude rubber stocks on hand at the end of the quarter were 112,103 tons as compared with 82,233 tons for the corresponding quarter of 1927, and with 96,601 tons for the fourth quarter of 1927.

Crude rubber afloat at the end of the quarter was 35,572 tons as compared with 45,384 tons and 44,890 tons for the comparative quarters mentioned.

## Hudson Reelects Directors

DETROIT, May 22—At the annual meeting of Hudson Motor Car Co. the following directors were elected: R. D. Chapin, R. B. Jackson, W. J. McAneeny, H. E. Coffin, O. H. McCornack, G. G. Behn, J. W. Beaumont, Joseph H. Whittaker and A. Barit. The following officers were reelected: R. D. Chapin, chairman of the board; R. B. Jackson, president and general manager; W. J. McAneeny, first vice-president and treasurer; H. E. Coffin, second vice-president; O. H. McCornack, third vice-president, and A. Barit, secretary.

## N. J. April Sales 12,512

NEW YORK, May 23—New Jersey sales of all makes of cars during the month of April was 12,512 as compared with 12,292 for April, 1927, according to Sherlock & Arnold. Total sales for the four months ended April 30 was 35,906 as compared with 36,172 for the same period a year ago.

## Lycoming Gets Contract

BUFFALO, May 23—Stewart Motor Truck Co. has signed a contract with the Lycoming Mfg. Co. for its 1929 engine requirements. Lycoming has been running on a two-shift basis since before Jan. 1 and recently invested \$500,000 in additional equipment.

## Business in Brief

Written exclusively for AUTOMOTIVE INDUSTRIES by the Guaranty Trust Co.

NEW YORK, May 24—The advance of the rediscount rate at New York last week has been followed by a moderate downward reaction of stock prices and by some diminution in the volume of trading. The Federal Reserve Bank of Philadelphia adopted a higher discount rate at the same time, so that eight of the 12 reserve banks are on a 4½ per cent basis, the other four continuing at 4 per cent.

#### FEDERAL RESERVE REPORT

Borrowings from the Federal Reserve banks by member banks continue to increase, the gain during the week ended May 16 being \$30,000,000. This expansion, however, was approximately offset by declines in holdings of open market purchases and Government securities. Reserves declined \$46,000,000 and the reserve ratio receded from 70.1 to 69.7 per cent.

#### CAPITAL FLOTATIONS

For the third time in history, new capital flotations in April, according to the Commercial and Financial Chronicle compilation, exceeded a billion dollars. The exact total is \$1,050,469,925, the highest monthly figure ever recorded. Of this amount, \$683,344,053 represents new capital and \$367,125,872 consists of refunding issues.

#### GENERAL TRADE

Trade in general has been hampered by unseasonably cool weather in nearly all parts of the country. Rainfall over wide areas, however, has aided crop growth.

#### FREIGHT CAR LOADINGS

The volume of railway freight traffic continues to run smaller than at this time last year, car loadings during the week ended May 5 numbering only 979,662. This is 45,099 below the total a year ago and 16,554 below that of two years ago.

#### FISHER'S INDEX

Commodity prices remain firm at virtually the highest level reached so far this year. Professor Fisher's index remained unchanged at 99.6 last week, as against 99.4 a month ago.

#### TEXTILE OPERATIONS

Sales of standard cotton cloths and unfilled orders increased during April, according to the monthly report of the Association of Cotton Textile Merchants of New York. Average weekly production again declined, being lower than in any other month since last October.

#### PETROLEUM OUTPUT

A very sharp decline, more than offsetting the marked gain of the preceding week, occurred in the output of crude petroleum during the week ended May 12. Average daily production amounted to 2,355,400 bbl. which compares with 2,466,650 bbl. a week earlier and 2,486,700 bbl. a year ago.

## April Total 434,188, Ford Output 64,300

### Sharp Increase in Canadian Passenger Car Figures Brings Gain in Month

PHILADELPHIA, May 22—Production of cars and trucks in the United States and Canada in April totaled 434,188, according to Department of Commerce figures. Of this total approximately 369,850 vehicles were produced by members of the National Automobile Chamber of Commerce, indicating a Ford production of approximately 64,300, though some production by non-member truck companies is included.

The 434,188 total for April shows an increase of about 11,000 over the March total (this being brought about mainly by a sharp increase in Canadian passenger car output), and an increase of about 5000 is shown over April, 1927. For the first four months, production in the United States shows an increase of about 36,000, with a decline of about 27,000 in the Canadian figures, a net gain of about 9000 for the combined production of the two countries.

Passenger car output in April in the United States was 364,877 as against 371,821 in March and 357,009 in April last year. April truck production in the United States was 45,071 against 41,558 in March and 47,750 in April last year. Canadian passenger car output in April was 20,546 against 7478 in March and 20,890 in April last year. April truck output in Canada was 3694 against 2246 in March and 3721 in April last year.

For the four months, passenger car output in the United States was 1,233,425 against 1,166,741 last year. Truck output in the United States in the same period was 145,404 against 176,151. Canadian passenger car output for the first four months was 45,044 against 67,184 last year. Truck output in Canada in the same period was 9887 against 14,708 last year.

### I.H.C. Springfield Plant Builds 180 Trucks Daily

SPRINGFIELD, OHIO, May 19—For the third time in as many months, a special train load of trucks has been shipped by the Springfield plant of the International Harvester Co. to distributing points in the West and a fourth train load is being prepared for shipment this week. The third train load consisted of 34 cars carrying 133 trucks left the local plant this week for Sioux City, Iowa.

Approximately 180 trucks are now being turned out at the local plant daily, an output greater than at any other time during the history of the plant. Indications are, officials said, this peak production will be maintained throughout the year.

### Four Months Total Shows 9025 Increase

	Cars	Trucks	Total
Jan. ....	212,281	27,875	240,156
Feb. ....	301,466	34,847	236,313
Mar. ....	379,299	43,804	423,103
Apr. ....	385,423	48,765	434,188

Total 1,278,469 155,291 1,433,760

1927

Jan. ...	211,395	42,907	254,302
Feb. ...	278,997	44,421	323,418
Mar. ...	365,634	52,033	417,667
Apr. ...	377,899	51,449	429,348

Total 1,233,925 190,810 1,424,735

May ...	379,139	50,666	429,805
June ...	295,198	45,956	341,154
July ...	245,585	33,871	279,456
Aug. ...	284,489	36,819	321,308
Sept. ...	235,121	36,519	271,640
Oct. ...	189,177	38,224	227,401
Nov. ...	114,076	25,743	139,819
Dec. ...	108,356	28,626	136,982

Total 3,085,086 487,234 3,572,300

### Mahoney St. Louis Plant Plans 25 Planes Monthly

ST. LOUIS, May 21—The B. F. Mahoney Aircraft Corp., maker of Col. Lindbergh's famous "Spirit of St. Louis," will move into its new factory at Lambert-St. Louis Field about June 15 and will turn out its first airplane there two months later.

The demand for Ryan planes, the product of the Mahoney Co., is far in excess of the company's San Diego plant's production capacity, according to John C. Nulsen, vice-president and general manager. The St. Louis plant will start with a production of 25 planes a month, Nulsen said. At the outset the only model produced will be the Ryan brougham, a five-place monoplane. The San Diego plant will be maintained to take care of West Coast business.

### Wilson Officers Reelected

PONTIAC, May 19—At the annual meeting of the directors of the Wilson Foundry & Machine Co. this week, officers were reelected as follows: C. B. Wilson, president; D. R. Wilson, vice-president and general manager; George P. Waller, secretary; Harry Gerkin, treasurer; N. W. Peterson, assistant treasurer. Following the meeting, the officers and directors were guests of D. R. Wilson at Bloomfield Hill Country Club.

### P. A. Revises Prices on 81

BUFFALO May 21—Price revisions have been made by Pierce-Arrow Motor Car Co. in models comprising the 81 line. The new prices follow:

7-pass. touring .....	\$3,100
2-pass. coupe .....	3,250
2-4-pass. coupe .....	3,350
2-pass. convertible coupe .....	3,350
2-4-pass. convertible coupe .....	3,450
5-pass. sedan landau .....	3,550
7-pass. sedan landau .....	3,700
7-pass. encl. drive landau .....	3,800

## M. & A.M.A. Index Shows April Drop

### Reduction of 12 Points Due Mainly to Decline in Original Equipment

NEW YORK, May 24—In anticipation of a seasonal May drop in car production, accessories and parts business for April showed a slight decrease, according to the monthly survey of the Motor & Accessory Manufacturers Association. This gives a general index for all divisions of 195 as compared with 207 for March.

Original equipment, which reflects most closely the probable development of car production, showed a drop to 213, as compared with 231 in March of this year and with 185 for April a year ago. Outside the record established in March of this year, the only other month to exceed the April business is October, 1925, when the index was 214.

Sales of accessories through regular trade channels also showed a slight recession, dropping to 107 as compared with 113 in March and with 156 in April a year ago.

Replacement parts, on the other hand, showed an increase in business, the index being 151 as compared with 136 in March and 117 in April, 1927.

Shop equipment business, which has been materially affected during the last few months by lack of purchase on the part of Ford dealers, showed another decline to 164 as compared with 174 in March and with 223 in April a year ago.

### Gets Nitralloy Rights

CANTON, OHIO, May 21—Announcement is made by executives that Central Alloy Steel Corp. has secured the American rights for manufacture of nitralloy steel, a product that is especially adapted to the manufacture of engines and will materially reduce their production cost. A reduction of the wear on engines by two-thirds is claimed for the new steel which was developed by a French scientist. Ludlum steel shares with Central Alloy in American rights on nitralloy.

### Durant Builds Cabriolet

NEW YORK, May 21—Durant Motors, Inc., is starting delivery this week on its new four-cylinder, convertible cabriolet at \$725. This car is finished in Newport blue with black window reveals and body beading striped in burnt orange. The body is set off with nickel fittings and natural wood wheels. Ample room is provided for two passengers in the rumble seat.

### Auburn April Output 1802

AUBURN, IND., May 22—Auburn Automobile Co. reports shipments for April of 1802 cars, 266 of which were for export. This compares with March production of 2148.



## Oakes Products Corp. Buys Oakes Company

### New Organization to Extend Line—Plans Acquiring Additional Company

DETROIT, May 21—The Oakes Products Corp. has been organized under the laws of Michigan to acquire all the assets and business of the Oakes Co. of Indianapolis. The new company is also acquiring basic patents on air cleaners for automotive use as well as industrial uses, and it is stated that another company manufacturing automobile accessories will be taken over very shortly. The Oakes company manufactures the spare tire locks, tire carriers, motor cooling fans, pressed steel door handles and door locks.

Headquarters will be in Indianapolis, but the company also will maintain offices in Detroit. The officers are: Claire L. Barnes, president; Oscar C. Bornholt, vice-president; Elmer Lowry, treasurer.

For the year ended Aug. 31, 1927, the company made net profit of \$220,765, equal to \$6.57 a share on the preference and to \$3.42 on the "B" after allowing "A" dividends. On the basis of present earnings and business, the management estimates net earnings for the current fiscal year will show considerable increase over the past year. The "A" stock pays dividends at the rate of \$2.50 annually. The Oakes Co. was originally organized under the laws of Indiana in 1912 with capital stock of \$10,000 and its business has been built up to its present size through its various lines of products and an increasing volume of business.

The company for years was owned by the Martin-Parry Corporation. Mr. Barnes, president of the new company, was vice-president of Martin-Parry as well as vice-president of the Oakes Company, and he is resigning his position with Martin-Parry to become head of the new combine.

In commenting upon the project, Mr. Barnes said the identity of another accessory company which will probably be merged with the Oakes corporation, will be announced soon. The company, he declared, numbers among its customers very nearly all of the important automobile companies in the industry. He also stated that the new company will have a very strong board of directors, with F. M. Small as chairman of the board.

### Hudson Builds 1425 Daily

DETROIT, May 22—Hudson Motor Car Co. is producing 1425 cars daily, with the output for May expected to be between 31,000 and 32,000 cars.

### Willys to Build New Truck

ELMIRA, N. Y., May 21—Plans for the employment of 800 to 1000 more men at the local Willys-Morrow Co.

were announced by John N. Willys, president of Willys-Overland Co., during an inspection trip here last week. It was found that approximately 400,000 sq. ft. of space was idle and this will be used to manufacture parts for trucks. It will be the rear axle for a new commercial truck planned by the company and production will start within 90 days.

## Peerless Subsidiary to Operate Branches

CLEVELAND, May 21—Peerless Motor Co. has been formed as a subsidiary of Peerless Motor Car Corp. to operate all factory branches of the company. R. N. Mosher, who has been active in the industry for the past 23 years, has been called from the Pacific Coast territory, where he was representing Peerless, to become general manager of the new subsidiary.

Under the new plan, each branch becomes a unit operating independently of the factory and each branch manager works on his own initiative with all the freedom of a distributor or dealer as regards local policies. As general manager, Mr. Mosher will act as general contact man between the branches and the factory.

### Hupp Building 1842 Weekly

DETROIT, May 21—Hupp Motor Car Corp. is building cars at the rate of 1842 weekly, according to R. S. Cole, general sales manager. Retail deliveries are now at the highest point, reaching 2277 in the first week in May. Mr. Cole reports business throughout the country continuing in good condition with prospects of high automobile sales for several months.

### Packard Moves N.Y. Service

NEW YORK, May 19—Packard Motor Car Co. of New York is planning to move its central service station from Long Island City to Eleventh Ave. at Fifty-fifth St.

## Willys Builds 2030 for New Day Record

### Builds 19,960 in First Half of Month—Has 30,000 Unfilled Orders

TOLEDO, May 19—Willys-Overland Co. produced 2030 cars on Tuesday, May 15, and broke all existing records for one day's output. That was 220 cars more than the previous high mark made in April. During the first half of May the company produced 19,960 cars as compared with 17,792 cars in the same period in April, and 12,778 cars in the same period in May, 1927.

The first half of the second quarter of the year has shown a total production by Willys-Overland of 58,460 which with first quarter production of 76,698 cars brings the year's total up to 135,158 units. Last year 126,301 cars were turned out in the first six months.

President John N. Willys announced that there are still about 30,000 unfilled orders booked despite the high production drive maintained in the last six weeks.

More than 1100 new dealers have been added since January which shows an increase of 23.2 per cent in dealer organization. There are about 22,000 workers at the Toledo plant.

### Crossley Offers New Six

LONDON, May 10 (by mail)—A new and smaller six-cylinder Crossley was announced today, supplementing the 20.9 hp. six. It has a 1991 c.c. (approximately two litres) engine with bore and stroke of 65 x 100 m.m., push-rod operated valves, four speeds, wire wheels and 30 x 4 1/4 in. medium pressure tires. Unlike the majority of British light sixes that have been introduced of late, it has magneto ignition. The wheelbase is 123 in. Only a four-door fabric sedan at £550 is offered.

## Oakland Adopts Standard Uniform for Service Men Throughout Country

PONTIAC, May 21—An army of something more than 15,000 men, representing the service station personnel of the Oakland Motor Car Co. throughout the United States, is being outfitted in a standard uniform recently adopted by the Oakland company.

The new service garb includes one uniform for the "privates" of Oakland's shop army and another for the "officers." The former will wear coveralls of special two-tone twill—powder blue with trim on pockets and collar of dark navy blue. The "officers," or floor men will wear a long coat of similar color and materials. Both the mechanics and the floor men will wear hats to match their uniforms.

According to R. A. Armstrong, serv-

ice manager for the Oakland company, the decision to uniform his nation-wide organization is the latest development in an unceasing campaign to raise still further the standards of Oakland-Pontiac service.

"We train our men with painstaking care and maintain a force of factory service representatives who visit every Oakland-Pontiac service station at frequent intervals," Mr. Armstrong said. "We have decided upon a standard service uniform not alone because of the more favorable impression that a neatly uniformed service department will make upon the public, but also because of the psychological effect that the new uniforms should have upon the service men themselves."

# Men of the Industry and What They Are Doing

## Osborne and Alexander Hold Conference Posts

Loyall A. Osborne, president of the Westinghouse Electric International Co., was reelected chairman of the board of the National Industrial Conference Board at its twelfth annual meeting in New York. Magnus W. Alexander continues as president and chief executive of the organization.

Irene du Pont, chairman of the finance committee of E. I. du Pont de Nemours & Co.; Herbert F. Perkins, first vice-president of the International Harvester Co.; Charles Cheney of Cheney Brothers, and George S. Harris, of the Exposition Cotton Mills, were reelected as vice-chairmen of the board.

## Yellow Reelects Hertz

John Hertz has been reelected chairman and president of Yellow Cab Mfg. Co., C. A. McCullough and S. H. Kesner, vice-presidents; A. N. Huttel, treasurer; E. N. D'Ancona, secretary and general counsel; S. H. Kesner and Benjamin Samuels, assistant secretaries, and W. D. Cook, assistant treasurer.

## Renault Returns to France

Louis Renault, French automobile manufacturer who has been spending the past few weeks surveying the industry in the United States, sailed on the Ile de France for his return to France. M. Renault says that as a result of his trip he has secured a much better idea of the automotive industry of America.

## Read Succeeds Warner

Claude Read has been promoted from assistant manager to manager of the parts division of Cadillac Motor Car Co. He succeeds W. M. Warner, who has resigned to go into business for himself. Mr. Read has been with Cadillac for the last 14 years and has specialized in the division of which he is now in charge.

## Bixby Fuller Engineer

Leo Bixby has been appointed chief engineer of Fuller & Sons Mfg. Co. to fill the vacancy created by the withdrawal of L. C. Fuller upon the sale of the company to the Unit Corp. of America. Mr. Bixby has been assistant to Mr. Fuller for several years.

## Osterholm in New Territory

H. G. Osterholm has been appointed representative of the Curtis Pneumatic Machinery Co. in Ohio, western Pennsylvania and western New York. He has been a member of the company's sales organization for several years.

## Coffin Heads Montauk Company

Howard E. Coffin has been elected to the presidency of the Montauk Beach Development Corp. and Carl G. Fisher has been elected chairman of the board.

## Congress Unanimous for Edison Medal

The resolution has been passed under unanimous consent by the House of Representatives providing for creation and presentation of a gold medal to Thomas A. Edison in recognition of his achievements for the public good. Duplicates of the medal in bronze would be coined and sold under the provisions of the resolution. An appropriation of \$1,000 is provided for striking off such a gold medal under the direction of the Secretary of the Treasury, "with suitable emblems, devices and inscriptions as he may determine for presentation to Mr. Edison."

## Murray Makes Changes

Dr. Edward H. Grafton, chemist of the Murray Rubber Co., has resigned and Warren F. Jones has been appointed to fill his position. A. N. Alexander, comptroller and director of the mechanical sales division for many years, has also resigned. Randolph Wert has been appointed comptroller, while Howard M. Stoner and B. M. Callen have been placed in charge of the mechanical sales division.

## Adds District Managers

Milwaukee Motor Products, Inc., has added new district managers as follows—O. W. Cadle in the Eastern territory; Dean Moberly in the Southeast; George Vierling, Jr., in the Southwest.

## De Palma Joins Lancia

Ralph De Palma has resigned as experimental engineer with the Chrysler Corp. to become a consulting engineer for the Lancia company which is soon to begin American assembly.

## Beeching Undergoes Operation

C. G. Beeching, district supervisor for the Hudson Motor Car Co. with offices in Louisville, is at the Kentucky Baptist Hospital, where he underwent an operation May 16 for appendicitis.

## G.M. Export Men Sail

A. M. de Tonnay, managing director of General Motors Argentina, sails for Buenos Aires May 26. Mr. de Tonnay is returning to his post after visiting the European assembly plants and the home office. C. R. Weber of General Motors Export Co. sailed May 19 for Osaka. He will be engaged in service work with General Motors Japan, Ltd.

## Norwegian Outlook Good, Says Kissel Distributor

Victor Arnesen, president of the Scandinavian Auto Import Co., Oslo, Norway, was a guest of the Kissel Motor Car Co. the week of May 14. Mr. Arnesen's organization has been distributor of Kissel products in the Scandinavian countries for the past two years.

He is optimistic over business conditions in Norway and expects increased automobile sales during the balance of the year. He attributes this to the fact that the Norwegian krone has recently been placed on a gold basis, which has stabilized and encouraged business generally.

He also stated that the people of his country prefer American-built motor cars to European makes, as they are more adaptable to their driving conditions, which require a great reserve of power, due to the many mountainous sections and unimproved roads.

## Moore With Billings & Spencer

J. V. Moore, formerly with Simonds Saw & Steel Co., is now representing the Billings & Spencer Co. in Pennsylvania Delaware and New Jersey.

## SKF Appoints Middleton

M. Middleton has been appointed Philadelphia district sales representative of SKF Industries, Inc., succeeding A. D. Shaw, resigned.

## Service Managers Forum to Hold Toronto Meeting

NEW YORK, May 23—The Factory Service Managers Forum will meet on June 18-19 at the Toronto Hotel, Toronto. Charles D. Hastings, chairman of the board of Hupp Motor Car Corp. and chairman of the service committee of the National Automobile Chamber of Commerce will preside at this meeting. The speakers will be:

H. Bertram Lewis, vice-president of Commercial Credit Co.; F. A. Oberhue, sales manager of United Motors Service, Inc.; J. L. Kenyon, service manager Chrysler Sales Corp.; C. E. McTavish, general parts and service manager of General Motors Products of Can., Ltd.; A. S. McArthur, superintendent of the garage department of the Toronto Transportation Commission, and A. R. Sandt of the sales section of General Motors Corp. Mr. McTavish is chairman of the committee in charge of this meeting and is assisted by G. McPherson, of Gotfredson Truck Co.; R. H. Parsons, of Studebaker; H. J. Moore, of Durant; D. E. Proudfoot, of Dodge Brothers; J. H. Hickey, of Chrysler; J. G. Bruce, of Willys-Overland; W. E. Gillott of General Motors and A. S. McArthur.



## Automotive Plants Take A.E.R.A. Space

Many Leading Vehicle and  
Parts Makers Listed  
Among Exhibitors

NEW YORK, May 22—American Electric Railway Association has assigned space for its 47th annual convention, to be held in Cleveland, Sept. 22 to 28, to 176 exhibitors, including the following:

American Car & Foundry Motors Co., Bendix Brake Co., Robert Bosch Magneto Co., Bragg-Kliesrath Corp., Brown-Lipe Gear Co., Budd Wheel Co., C. G. Spring & Bumper Co., Clark Equipment Co., Cleveland Pneumatic Tool Co., Continental Motors Corp., Cowdrey Brake Tester Organization, Inc., Crew Levick Co., DeLuxe Products Corp., Four-Way Lock Co., General Electric Co., Graham Brothers, Gramm Motors, Inc., Griffin Wheel Co., Guide Motor Lamp Co., Hale & Kilburn Co., Hercules Motors Corp., Hyatt Roller Bearing Co., International Motor Co., Johns-Manville Corp., Lang Body Co., Leece-Neville Co.

Mack-International Motor Truck Corp., Mack Motor Truck Co., Mack Trucks, Inc., Malleable Screw Products Co., National Carbon Co., North East Electric Co., Pantasote Co., Inc., Ross Gear & Tool Co., S.K.F. Products, Inc., Safety Car Devices Co., Saf-T-Cab Corp., Snap-On-Wrench Co., Studebaker Corp. of America, Timken-Detroit Axle Co., Timken Roller Bearing Co., Universal Lubricating Co., Versare Corp., Walter Motor Truck Co., Waukesha Motor Co., Westinghouse Electric & Mfg. Co., Wm. Wharton, Jr., & Co., White Co., Willard Storage Battery Co. and Zenith Detroit Corp.

### Lincoln Prizes Awarded

CLEVELAND, May 22—First prize of \$10,000 in the arc welding contest staged by the Lincoln Electric Co., was awarded at the spring meeting of the American Society of Mechanical Engineers to J. W. Owens of the Newport News Shipbuilding & Drydock Co. The second prize, \$5,000, was awarded to Henri Dustin, professor in the engineering school of the University of Brussels. Third place went to Commander H. E. Rossell, construction corps, U. S. Navy.

### Morris Adds New Line

LONDON, May 21 (by cable)—Morris Motors has scheduled production of a light four-cylinder seven-horsepower car with four-wheel brakes. The sedan, seating four adults, will sell for about £125. Deliveries will probably be deferred until after the Olympia show.

### Excise Taxes Continue Lower

WASHINGTON, May 24—A total of \$4,230,787 in excise taxes was collected from the automobile industry during

April of this year, which was a decrease of \$2,209,557, compared with April last year, according to figures just announced by the Treasury Department. Total receipts for the past 11 months of the present fiscal year aggregated \$45,277,778, a decrease of \$8,083,788 compared with the first 11 months of the fiscal year beginning July 1, 1926, and ending April 30, 1927.

## Speed Obsolescence, Association Urged

CHICAGO, May 19—Speaking at the general meeting of the Screw Machine Products Association, Dr. Arthur E. Swanson of Swanson & Ogilvie, urged the necessity of cost systems, declaring management must know at what price to take or leave business. Management today, he said, is not only interested in the internal affairs of its own business, but in the whole industry of which it forms a part. Continuing, he said:

"If an industry is to be in a healthy state every member in that industry must be strong. It is the selfish duty of those more fortunate to help those not so well off, since the weakness or lack of knowledge of conditions disturbs the whole situation. If every member of a group knows its costs accurately it is easier to secure a fair margin of profit."

Obsolescence of tools must be accelerated if there is to be increased efficiency, Dr. Swanson said. While this hurts the industry in one sense, yet since it helps general industry, new developments must be welcomed, even sought, he declared.

### Chevrolet K.C. Factory to Build 350 Cars Daily

DETROIT, May 22—Chevrolet Motor Co. will complete in October its assembly plant at Kansas City costing \$2,250,000. The factory will have a daily capacity of 350 cars, providing Chevrolet with facilities for the production of more than 1,250,000 cars annually. The project will serve western Missouri, Kansas, North and South Dakota, Wyoming and Colorado.

The Sales Department, now operating in the Kansas City Zone location, Nineteenth and Grand Avenue, Kansas City, will be removed to the plant as soon as the plant is ready for occupancy, and Paul M. Seese will be in charge of the sales and service departments. Appointment of a resident comptroller will be announced later.

### To Handle Ontario Paper

TORONTO, May 21—York Acceptance Corp., subsidiary of Durant Motors of Canada, Ltd., has introduced a change in policy by which all Durant car sales paper in Ontario will hereafter be looked after by the York Acceptance Corp., which means that Durant Motors of Canada will practically carry its own car sales paper, as it owns the entire stock of the company.

## Financial Notes

Dunlop Rubber Co. stockholders are being invited to subscribe for 2,050,000 new ordinary shares at 25s. each with a face value of 6s. 8d., or a premium of 18s. 4d. This will bring the total number of ordinary shares up to 22,502,925 out of an authorized total of 46,800,000. The new shares are offered in the proportion of one for every 10 shares already held, equivalent to a bonus of 7½ per cent per share. This issue will give the Dunlop company additional working capital amounting to £2,562,500, less the costs of the issue, for a capital account liability of £683,333.

E. I. duPont de Nemours & Co., Inc., has declared an extra dividend of \$3 and an additional extra of 50 cents on the common, in addition to the regular quarterly dividends of \$2.50 on common and \$1.50 on the debentures. The \$3 extra is passed on from the extra received by the company on its General Motors holdings. The 50 cents extra is payable from the company's own operations.

Sparks-Withington Co. stockholders will meet May 31 to vote on proposals to create a new issue of \$1,000,000 of 6 per cent cumulative convertible preferred stock and to increase the number of authorized common shares from 200,000 to 400,000. Authorization will also be asked to eliminate the 10,000 shares of 7 per cent cumulative preferred.

Packard Motor Car Co. reports net profit for April of \$2,250,000, equivalent to 72 cents a share, as compared with \$1,980,000, or 66 cents a share, for the corresponding month last year. Net income for the eight months ended April 30 was \$14,788,492, or \$4.92 a share, as compared with \$8,890,153, or \$2.96 a share, for the corresponding period a year ago.

Moto Meter Co., Inc., and subsidiaries report net earnings in the first quarter this year of \$269,741 as against \$348,148 in the first quarter of 1927. This includes earnings of the National Gauge & Equipment Co., which is one of the company's subsidiaries and whose earnings previously were shown separately.

Automotive Fan & Bearing Co. reports profit of \$41,806 before Federal taxes for the first three months of the current year, equal to 53 cents a share on the 77,900 shares of common stock outstanding. This is equal to two and one-half times the dividend requirements for the period.

Commercial Credit Co. reports net income for April of \$302,297, an increase of \$66,387 over March this year and of \$143,280 over April, 1927. Consolidated volume for April was \$24,883,580 as against \$20,539,138 in April, last year.

Wright Aeronautical Corp. has given its stockholders the right to purchase additional stock. Holders of five shares on June 2 will receive the right to buy one new share at \$100.

Stutz Motor Car Co. of America, Inc., reports net profit for 1927 of \$195,831. This is equivalent to 85 cents a share and compares with \$365,512, or \$1.56 a share, in 1926.

## March Export Sales Gain 40% to 71,251

Total for First Quarter 163,653  
—Foreign Assemblies  
Approximate 40%

NEW YORK, May 19—World consumption of automobiles of American design, outside of the United States during March, is placed at 71,251 cars, or an advance over February of 40 per cent, by the National Automobile Chamber of Commerce. Total for the first quarter was 163,653 and the total for the entire year of 1927 was 640,500.

Not more than 60 per cent of these cars bought abroad were actually shipped complete from the United States, according to present practice, consequently export figures show only a part of the picture of the overseas trade of American designed automobiles. Foreign assemblies make up the remaining 40 per cent.

Dr. William Scholz, general manager of the Associated Automobile Manufacturers of Germany, who is in this country studying promotion methods of the industry which have made possible the rapid expansion of both domestic and overseas trade, has been spending some time in Detroit where American manufacturers have opened their plants to him for his inspection. He plans to spend a week visiting the headquarters of the N. A. C. C. to study in detail the operation of that body in its various departments.

## Dillon, Read to Merge Ault & Wiborg Company

NEW YORK, May 21—Dillon, Read & Co. has acquired the Ault & Wiborg Co., one of the largest producers of printing inks and varnishes, with a view to forming an international combination of this and other companies in the same field. The purchase price was \$14,000,000. The Ault & Wiborg company will be the nucleus of the proposed combination. It was founded in 1878 in Cincinnati by L. A. Ault, who is its president.

## Buys Lubricator Business

MADISON, WIS., May 21—The Madison-Kipp Corp. has purchased from the Detroit Lubricator Co. all of its force feed lubricator activities with the exception of the locomotive type. All equipment of this division is being moved to the Madison plant. The transaction was an outright purchase and does not affect the capital stock or the management of either company.

## Rubber Makers to Meet

TRENTON, N. J., May 19—The Rubber Manufacturers' Association of New Jersey will hold its summer meeting and outing at the Trenton Country Club on June 18.

## British to Develop Near East Market

WASHINGTON, May 19—A company known as Associated British Cars, Ltd., has just been formed in Alexandria, Egypt, according to the Department of Commerce, for the purpose of developing sale and promotion of British automobiles in the Near East. Plans for carrying substantial stocks and spare parts have been made, and the Association will also act as wholesalers of Dunlop tires in Egypt. Showrooms and offices are located at Alexandria and Cairo.

## Studebaker Extends Unboxed Shipments

DETROIT, May 19—Extension of the unboxed method of shipping Studebaker and Erskine cars on the high seas to include additional European points and Central America, South America and Newfoundland has been made by H. S. Welch, manager of export sales for the Studebaker Corp. of America.

Arrangements have been completed with three new steamship lines to transport unboxed cars from New York to Antwerp, Rotterdam, Hamburg, Copenhagen, and Helsingfors, Finland. Another line will take care of all shipments to South America, Central America, and Newfoundland.

For some time Studebaker has been shipping cars to Germany and all North Sea and Baltic ports by this method via the Bernstein line—which will continue this service as in the past. Spain recently was included. In the last four months Studebaker has shipped 2100 unboxed cars to foreign countries.

## Opens Singapore Branch

SOUTH BEND, May 21—Opening of a branch office in Singapore, Federated Malay States, is reported by Howard S. Welch, manager of export sales for the Studebaker Corp. of America. This branch will serve the Federated Malay States, Dutch East Indies, Burma, French Indo-China and Siam. T. C. Conner, formerly associated with the New York branch, will be manager at Singapore. Colin McCulloch has been appointed assistant, and W. C. Finn, service manager.

## Trindl to Move Plant

AURORA, ILL., May 21—The Trindl Corp. will transfer its production activities to this city this fall upon completion of a new factory unit. The plant will employ about 150, manufacturing piston pins, wrist pins, valves, spring bolts and kindred lines as well as several accessories.

## Tire Tariff Change Opposed in Canada

Manufacturers Assert Reduction Would Permit Dumping From United States

OTTAWA, May 19—Tire manufacturers of Canada appeared this week before the Canadian Advisory Board on Tariffs and Taxation to oppose the application of the Consumers League of Canada, a low-tariff organization of political origin, for a substantial reduction in the tariff protection afforded Canadian tire makers on the ground that this protection, ranging from 20 to 30 per cent, was too high.

Briefs submitted by the Association of Canadian Rubber Manufacturers in behalf of the companies contended that prices were only 7 per cent higher in Canada than they were in the United States, therefore the manufacturers of the Dominion did not use the Canadian duties on imports to raise the prices of their goods.

Arthur Hannay, secretary of the Association of Canadian Rubber Manufacturers, declared that a reduction in duties would enable the United States firms to get around the Anti-Dumping Act and flood the Canadian market in times of stress in their own country. The largest pneumatic tire plant in the Dominion produced from 8000 to 8500 tires daily, whereas the largest in the United States had a capacity of 52,000 tires daily. United States firms could produce at lower costs accordingly. Protection for Canadian firms was essential if they were to survive the competition of large companies.

The briefs showed that the rubber industry in the Dominion produced finished goods to the value of \$80,000,000 in a year. Canadian firms bought \$50,000,000 worth of raw products yearly, about \$17,000,000 of which were purchased in the Dominion.

## Durant Exports Gain 30%

NEW YORK, May 19—Durant Motors, Inc., reports a 30 per cent increase in export sales for the first four months of 1928 as compared with the four-month period of any previous year. According to T. S. Johnston, assistant to W. C. Durant, exports from the Elizabeth plant will probably be 300 per cent greater for the month of May than in May last year.

## Marmon Sets 7 Records

INDIANAPOLIS, May 21—G. M. Williams, president of Marmon Motor Car Co., reports receipt of information that a Marmon car established seven world non-stop endurance records at the Miramas Autodrome, near Marseilles, in a 50,000 mile run conducted by F. L. Rapson, head of a London tire company. The records were confirmed by the International Association of Recognized Auditors.



## Guayule Operations Suspended for Time

Reductions in Tree Rubber  
Prices Hit Industry—Seek  
Cheaper Extraction

TORREON, MEXICO, May 21—As a result of the removal of restrictions on rubber production by the British Government, the guayule rubber industry of Mexico will be abandoned, at least temporarily. This information was received here from officials of the Continental Rubber Co. which has ordered that its \$5,000,000 rubber factory here be closed down and that its three other plants, situated in the states of Zacatecas and San Luis Potosi, cease operations as soon as they finish with the stocks of guayule shrubs now on hand. Several other smaller rubber factories in this region also will close down, it is announced.

The cost of producing guayule rubber makes it impossible to compete with tree rubber under normal conditions, it is stated. Experiments are now being conducted with the view of discovering a cheaper method of extracting the rubber from the shrub than is possible under the present process. If these experiments are successful, the industry will be resumed on a large scale, it is stated. Millions of acres of land which are otherwise worthless are covered with a profuse growth of guayule shrubs, the more extensive growth being found in the plateau region of the states of Coahuila, Durango, Zacatecas and San Luis Potosi. The shrub becomes of commercial size within about four years after planting or seeding.

The closing of the factories finds thousands of tons of the shrub cut and baled and stored upon the ranches awaiting shipment. The price paid for the shrub ranged from \$150 to \$180 a ton during the time that the industry was flourishing. Its sales brought riches to many poor land owners, and thousands of laborers were employed in cutting and handling the shrubs in the process of extracting the rubber content. The throwing out of employment of these laborers will have a serious economic effect here and in other communities and localities. The Mexican Government is now giving consideration of this phase of the situation.

## U. S. to Add Passaic Unit

NEW YORK, May 19—United States Rubber Co. has purchased a building in Passaic, N. J., adjacent to its largest mechanical goods factory. This building will house the company's general laboratories.

## Simplex Piston Ring Upheld

BROOKLYN, May 21—The Marshall patent No. 1,601,575 owned by the Simplex Piston Ring Co. of America, Inc., was held valid and infringed in the Dis-

trict Court here in a case against the Hamilton Motor Parts Co., distributor of the Du-All ring. This decision was affirmed April 9, 1928, by the Court of Appeals for the second district. In a suit on this patent in the U. S. District Court at New York, a preliminary injunction has been granted against the Miracle Piston Ring Co., restraining the manufacture, use or sale of the Miracle ring.

## Rutherford Heads Pennsylvania Rubber

NEW YORK, May 19—W. O. Rutherford, former vice-president and director of the B. F. Goodrich Co., has been elected president of the Pennsylvania Rubber Co. Mr. Rutherford served three terms as president and director of the Rubber Association of America and has also been president and director of the Motor & Accessory Manufacturers Association.

## Rubber Stocks Again Drop

NEW YORK, May 21—Lack of interest resulted in an inactive week in the crude rubber market, according to F. R. Henderson Corp. This company, however, believes that an early change is inevitable as the spring advances and more cars get on the road. Stocks of crude rubber in London again decreased, bringing the total to 50,837 tons.

## L. R. Cooper

BUFFALO, May 19—L. R. Cooper, secretary of the Crosby Co., sheet metal stamping producer, died suddenly May 14.

## Franklin Export Counsel Describes Need for Transportation Facilities to South America

SYRACUSE, May 21—The race of European countries to establish fast air communication with South America looms as the most interesting export development of the next decade, according to E. G. Willems, export counsel for the Franklin Automobile Co., who has just returned to the home office in Syracuse after a year's trip.

The most vital and immediate problem for the United States to consider is the commercial advantage ignored by this country through failure to provide adequate transportation facilities to South American ports, Mr. Willems said. He pointed to the fact that ships leave Buenos Aires almost daily for Europe, while only through cooperation of a British-owned line have sailings about once every 10 days been made possible to New York. Ships of an American Line leave every 15 days.

At present, Mr. Willems said, it requires two months for an American export representative in Buenos Aires to send a contract by letter and have it confirmed by mail so that goods can

## Closed Cars Increase in British Registry

Sedans 68 Per Cent of Registrations in February Quarter,  
Rising 10 Per Cent

LONDON, May 9 (by mail)—The Ministry of Transport returns of passenger cars registered during the period Dec. 1-Feb. 29 show appreciable further increase in the popularity of sedans and other closed models. Taking all sizes, the percentage of sedans among new cars increased to 68 per cent from 58.6 per cent during the preceding three months. In ratings above 14 hp. only one shows less than 80 per cent sedans, while 11 are over 90 per cent. In the most popular type of British car, the 12 hp. models, of which 8017 in all were registered, 62 per cent were sedans; in 13 hp., 14 hp. and 15 hp. sizes respectively the percentages were 74, 74 and 82.

The second largest number of new registrations applied to 8 hp. ratings (which include the Austin Seven); of these, 5265, sedans constituted 49 per cent. After this size in numbers of new cars registered were the 13 hp. models (4501) and the 14 hp. (4292). The aggregate of new registrations during the three months was 33,616 closed and open cars.

## Afco Moves Offices to N. Y.

NEW YORK, May 21—Afco Products Co. has moved its main offices from New Haven, Conn., to 11 West Forty-second St., New York, where E. Horace Hawthorne, of the automotive division, will be located.

be ordered. Europe, which is virtually the same distance by steamer (and particularly France) has been working for two years to secure five-day air-and-boat communication and will shortly be able to get contracts confirmed, orders placed and merchandise on boats before the American representative's first letter is received in New York.

The French are going ahead with plans which look forward to seaplanes making the Cape Verde-Noronha hop, and cutting the time between Paris and Buenos Aires to virtually three days as against the 20 days between Buenos Aires and New York. Some mail has already been carried by air over the entire route.

A network of commercial air lines is spreading with amazing rapidity over the entire globe. Nevertheless, by reason of unwillingness to subsidize air lines in this country as well as the lack of air-mindedness on the part of the nation, America is being out-distanced in the race for South American business, Mr. Willems believes.

## Moskovics Extols Lockhart to S.A.E.

### Traces Many Developments in Motor Car Engineering to Racing

CHICAGO, May 19—Members of the Chicago Section of the Society of Automotive Engineers paid tribute this week to Frank Lockhart, who was to have appeared to tell the contribution of racing in the development of automobile design.

Recalling the tragic death of Lockhart, F. E. Moskovics, president of the Stutz Motor Car Co. of America, Inc., fell into the spirit of the gathering and turned it into a testimonial and tribute to Lockhart, whom he eulogized for his high character as a man, his daring as a driver, and his genius as an engineer.

"In every respect Frank Lockhart was the greatest driver I have ever seen and his contribution to automobile design as well as his skill as a driver exceeded that of any other racer who ever sat behind the wheel of an automobile," said Mr. Moskovics. "If ever a man was devoted to his job it was Frank Lockhart. Though he was only 25 years old and had never been through an engineering school, he was an expert mechanic, the best draughtsman and one of the best designers I have ever seen.

"Racing has taught us much indeed, and many an idea first introduced in a racing car, often at the risk of life, has since become a standard feature of passenger cars. What has improved the tires we use to such an astounding degree? The experience of racing, the need for stronger, more durable tires which could stand up under the terrific pounding and speed of racing.

#### Carburetion Improved

"The same is true of fuel. Here again the exigencies of racing have been the incentive toward development. In like manner the improvement in carburetion, the introduction of superchargers, and now the advent of inner coolers are all due to what racing has taught in the designing and building of passenger cars.

"Just the other day a carburetor manufacturer told me that the day is soon coming when passenger cars will use the inverted type of carburetor now used on racing cars. Another great racing development universally employed is the supercharger, which experts are agreed will soon find its way into the makeup of standard automobiles.

"Who can speak against racing in the face of the fact that every important development in engineering, every forward step in passenger car design, had its origin in racing cars and in the light of the further fact that great race drivers risk their lives not for the glory and the glamour of winning alone but for the part they may play in proving

### Watson to Broadcast Indianapolis Race

PHILADELPHIA, May 21—The facilities of the National Broadcasting Co. have been engaged by the John Warren Watson Co. to broadcast the last hour of the Indianapolis Race, May 30. The purpose of the company is to honor the race drivers and to bring home to Americans a higher appreciation of the work of the drivers in contributing to the advancement of the modern automobile.

out the superiority of certain innovations in racing car design and the satisfaction they get out of seeing these advancements made a part of the cars later used by the motoring public.

"Greater acceleration, easier steering and a multitude of other improvements that people now enjoy in their cars were first tried out and proved in battles of speed on race tracks. I went into racing for the lessons it teaches and because of the fact that it has been the means of making possible better automobiles of greater use to mankind."

#### Dresser Metropolitan Chairman

NEW YORK, May 21—The evolution of bus body and chassis design was traced in two interesting papers presented at the May meeting of the Metropolitan Section of the Society of Automotive Engineers by W. G. Naegel of the Lang Body Co., and George W. Smith, Jr., of the White Co.

The following have been elected officers of the section for the coming year: S. R. Dresser, Whitney Blake Co., chairman; G. A. Round, Vacuum Oil Co., vice-chairman; J. C. Morrell, Westinghouse Air Brake Co., treasurer; W. H. Conant, Panhard Oil Co., secretary.

#### Kimball Buffalo Chairman

BUFFALO, May 21—Earl W. Kimball has been elected chairman of the Buffalo Section of the Society of Automotive Engineers, with Gustaf Carvelli, vice-chairman; Donald Cox, secretary, and W. Edgar John, treasurer. Mr. Kimball will be Buffalo Section representative at the summer meeting in Quebec. At the May meeting, Bruno Beckhard, secretary of the Outboard Contest Board of the American Power Boat Association, read a paper on outboard motor racing. Pictures of the Albany-New York race were shown.

### Mail Order Tires Reduced

NEW YORK, May 22—Montgomery Ward & Co. has reduced prices on all grades of tires from 5 to 15 per cent. The guarantee on tires has been increased from 12,000 to 15,000 miles.

## Superchargers Stock in Targa Florio Run

### Divo in Bugatti Finishes First —Two Minutes Cover First Three Cars

PARIS, May 10 (by mail)—Driving a straight-eight supercharged Bugatti of 140 cu. in. piston displacement, Albert Divo won the nineteenth annual race for the Targa Florio, by covering 335½ miles over mountainous roads in Sicily at an average of 45.65 m.p.h. Campari finished second on a 91½ in. six-cylinder Alfa Romeo, 1 min. 37 sec. behind the winner.

The feature of this race, in which 42 cars came to the starting line, was the use of superchargers on stock chassis. Of the 15 machines which finished all but two were equipped with superchargers. The winning Bugatti was a stock sports chassis with roller bearing crankshaft and connecting rods and was run on straight gasoline. The engine developed 110 hp. at 5400 r.p.m. and the car had a maximum speed of 105 m.p.h. The six-cylinder Alfa Romeo which came in second developed 86 hp. at 4800 r.p.m. Four other Bugattis entered officially had higher compression and ran on Elcosine, an Italian fuel composed of alcohol, benzol, ether and other products, to the total exclusion of gasoline.

#### Results of race:

	h. m. s.
1. Divo, 140 in. supercharged Bugatti .....	7 20 56 3/5
Average: 45.65 m.p.h.	
2. Campari, 91½ in. supercharged Alfa Romeo....	7 22 33
3. Conelli, 91½ in. supercharged Bugatti .....	7 22 50
4. Chiron, 122 in. supercharged Bugatti .....	7 27 22
5. Mme. Junek, 122 in. supercharged Bugatti .....	7 29 40
6. Minoia, 91½ in. supercharged Bugatti .....	7 40 21
7. Fagioli, 91½ in. supercharged Maserati .....	7 43 25
8. Dreyfus, 91½ in. supercharged Bugatti .....	7 53 53
9. Lepori, 140 in. supercharged Bugatti .....	7 54 05
10. Foresti, 122 in. supercharged Bugatti.....	8 09 39
11. Countess Einsiedel, 91½ in. supercharged Bugatti	8 21 12
12. Ernesto Maserati, 122 in. Maserati .....	8 21 25
13. De Sterlick, 122 in. supercharged Maserati .....	8 25 27
61½ inch class (201.3 miles)	
1. Riccioli, Fiat 60 in.....	5 15 23
Average: 38.3 m.p.h.	
2. Rallo, Fiat 60 in. ....	5 58 35

### U. S. Cars Gain in Rome

WASHINGTON, May 23—A cable to the Department of Commerce from Rome indicates sales of American automobiles there are increasing rapidly despite widespread press campaign in favor of domestic vehicles. The leading automobile plant of the Rome district is reported increasing its output while others are inactive.



## French Air Mission to Study U.S. Ways

Will Visit Factories and Investigate Developments in Many Cities

WASHINGTON, May 23—A special mission of 11 French aeronautical experts will spend the next three weeks in this country studying civil airways and visiting airplane and equipment factories, according to Assistant Secretary MacCracken, in charge of aeronautics for the Department of Commerce. Leighton W. Rogers, commercial attache of the department, will escort the mission on its tour.

The mission was selected by the French committee for the development of aeronautics, which is itself supported by the French government and French industry acting through chambers of commerce. The committee last year sent a mission to Germany to study air commerce developments.

Transportation of the mission in this country will consist of two-passenger planes placed at its disposal by the Department of Commerce. Chambers of Commerce in each city on the itinerary will receive the party and arrange for visits to airports, manufacturing plants and other points of interest.

The proposed itinerary now includes stops in the following order:

New York City, the Curtiss factory and the Wright factory; Hadley Field, New Brunswick, thence by air to Buffalo, thence to Cleveland, Detroit (early next week), Chicago, about May 31; San Francisco, about June 2 or 3; Los Angeles, June 5; Salt Lake City, Omaha, Chicago, June 6-8; Dayton, June 8-9; Washington, June 10-13; Lakehurst, N. J., June 13; New York, June 14-16.

Members of the mission include General Boucabeille, French Army, retired; Andre Michelin, tire manufacturer and industrialist; Dr. Abd El Nour, president, Aero Club of the Ardennes; M. de Montgolfier, industrialist; M. H. Kahn, technical director of the commission; M. Fournier, Paris Chamber of Commerce; M. Pinchot, Paris Chamber of Commerce; J. Joire, banker; M. d'Anglejean, Compagnie Generale Aeropostale; M. Barth, representing French railroads, and Andre Wateau, member of the commission.

## Trabold Reelected President

ALLIANCE, OHIO, May 21—Frank W. Trabold has been reelected president and general manager of the Transue Williams Steel Forgings Corp. Dwight Keplinger was named vice-president, and Herbert Woolf, secretary-treasurer. Regular dividends, suspended when business slumped several months ago, were voted restored. The company is working 80 per cent of maximum production, manufacturing forgings for automobile parts and accessories.

## Studebaker Reports 3900 Dealers Signed

SOUTH BEND, May 21—More than 3900 Studebaker dealers have been signed as of May 15, exceeding the best previous record by more than 800 dealers according to Paul G. Hoffman, vice-president in charge of sales. Representation in the export market is also at a new record point, the total being just under 2000. More than 300 export dealers have been added during the past six months.

The company also reports that 245 Studebaker distributors and dealers have been handling Studebaker products for the past 10 years or more. One man shows a dealer affiliation with the company for more than 27 years.

## Shuler to Standardize on Front Brake Axles

LOUISVILLE, May 19—Shuler Axle Co., Inc., announces that front wheel brakes are now standard equipment on Shuler front axles. According to W. E. Dugan, president, this step was taken after the principles and construction of front wheel braking had been proven practical and beyond the stages of experiment.

It is also announced that present users of standard Shuler fronts may equip their axles with brakes, as the adoption has been so worked into their design that either Bendix mechanical or hydraulic can be made interchangeable with axles now in service.

## Paul V. Clodio

NEW YORK, May 19—Paul V. Clodio, sales manager for Bragg-Kliesrath Corp., Long Island City, died Monday, May 14, of Bright's disease. Mr. Clodio was on an extended leave of absence and had gone to the mountains to seek relief. He was a pioneer in the industry, having been the first importer of Bosch magnetos from Germany, and was also an importer of Benz and Mercedes cars. Previous to joining the Bragg-Kliesrath organization he was in charge of sales for Houde Engineering Co. and shared the American rights on that product.

## Keystone Gets Contract

WASHINGTON, May 19—A contract for 35 light bombing planes, at a unit cost of \$24,750, has been placed by the Army air corps with the Keystone Aircraft Corp. of Bristol, Pa. Eighteen of the planes will be powered with Wright Cyclone engines and 17 will have Pratt & Whitney Hornet engines. Each plane will have two engines with a total horsepower of 1050.

## Industry Continues High Steel Consumer

New Orders Reported on Reduced Basis—Competition for Business Keener

NEW YORK, May 24—An unusually high rate of shipments of full-finished automobile sheets for this time of the year indicates that the automotive industries continue to absorb steel in good volume. Mills, however, complain of more hand-to-mouth buying and shrinkage in individual orders placed at one time. Some rollers appear to be better situated than others with reference to backlogs and in consequence competition for new business has undoubtedly grown keener.

Apprehensive lest sheet prices suffer in this scramble for orders, sheet-bar makers are seeking to steady the market by efforts to advance the price for semi-finished material \$1 a ton, but so far third-quarter business appears to find takers at the old price of \$33. While there have been reports of concessions from the 2.00 cents, Pittsburgh, price for blue annealed sheets, these are said to have been isolated instances applying only to the product of continuous mills.

Black sheet prices seem to hold fairly steady. No prices lower than 4.00 cents, Pittsburgh, have been uncovered for full-finished body sheets. Wide sizes of hot-rolled strip steel seem to be more subject to price-shading than other descriptions of finished steel, and as low as 1.75 cents, Pittsburgh, is being done. Automotive demand for bolts and nuts is light. Makers of automotive alloy steels are reported to have revised upward the alloying differential, base price remaining unchanged. Ordinary cold-finished steel bars move in small tonnages at unchanged prices.

**Pig Iron**—Automotive foundries are drawing freely on their second quarter contracts, but are not giving much thought to third quarter requirements, preferring to await developments. The Michigan delivered price continues unchanged at \$18.

**Aluminum**—Demand for foundry metal continues good and market conditions show no change. The sole domestic producer is believed to be operating at a fair rate, demand for castings from automotive consumers being very satisfactory.

**Copper**—With the price for Connecticut deliveries lifted to 14½ cents and Middle West deliveries to 14½ cents, the market presents a more quiet appearance. Wall Street has it that in the recent buying movement 150,000,000 lb. were contracted for by domestic consumers. Copper and brass products have been advanced proportionate to the rise in the metal.

**Tin**—Buying by consumers is confined to small lots. The market is dull and there are no indications as to its future trend. Foreign advices prognosticate another slight advance in the visible supply on May 31.

**Lead**—Demand is light. The market is steady and unchanged.

**Cadmium**—A 5 cent per pound advance to 65 cents is attributed to good automotive demand.

## California to Vote on High-Speed Road

SACRAMENTO, CAL., May 19—The first section of a double-track high-speed motorway, to connect San Francisco with Los Angeles, will be placed on the ballot at the general election this fall, in the form of an initiative measure, authorizing the expenditure of \$40,000,000 for this first link. This statement was made to Governor Young by W. R. McKay, of Hanford, head of the organization backing the initiative measure for the high-speed highway.

"San Francisco and Los Angeles people have agreed on the direct taxation method of building this motorway," said Mr. McKay, "and if the initiative measure passes, it will be built without a bond issue. The section of the high-speed motorway will consist of two 20-ft. paved roads, separated by a 10-ft. parkway, these roads to be entered from the present highways only at the towns and cities through which the motorway passes. These towns are few in number since the proposed course of the new motorway is almost a straight line between the two cities. Crossings will be made by tunnels underneath the motorway, and curves and steep grades have been virtually eliminated."

## Weirton to Increase Output

STEUBENVILLE, OHIO, May 19—Improvements totaling \$1,350,000 on the open hearth and finishing mills of the Weirton Steel Co. got under way this week, it was announced following action of the board of directors of the company. The \$1,350,000 was appropriated to bring the ingot capacity of the mill up to 1,200,000 in 1929. The Weirton company installed recently a new \$20,000,000 steel plant and continuous mill which started operation April 15.

### Coming Feature Issues of Chilton Class Jour- nal Publications

June 10—A. E. A. Summer  
Meeting Number—Motor  
World Wholesale

June 23—Engineering Issue—  
Automotive Industries

## Shellaby Named Manager of Rockingham Speedway

BOSTON, May 19—A complete reorganization of the Rockingham Speedway, at Salem, N. H., was brought about today when the new owners met and incorporated as the Rockingham Amusement Co. of Massachusetts. Harrison Brown, New England agent of the Boston & Maine Railroad, was chosen president; Allen C. Jones, vice-president, and Casril Wein, treasurer. H. Kirby Shellaby, formerly manager of the Culver City Speedway, of California, was made general manager.

Sanctions have been granted for two races this year, one on July 4 and the other on October 12, Columbus Day. In addition the company will conduct motorcycle races, boxing bouts and other athletic events on holidays and Saturday afternoons. Manager Shellaby will leave in a few days for Indianapolis to sign up drivers.

## Yellow Truck Board Named

PORTLAND, ME., May 19—The stockholders of Yellow Truck & Coach Mfg. Co., at their annual meeting this week, voted to elect a board of directors for the ensuing year as follows: O. L. Arnold, Irving B. Babcock, Albert Bradley, E. R. Breech, Fred J. Fisher, John Hertz, T. S. Merrill, J. L. Pratt, John A. Ritchie, Paul W. Seiler, Alfred H. Swayne.

## Motor Equipment to Get Army Trial

WASHINGTON, May 19—Automotive equipment including trucks, tractors, tanks, motorcycles and airplanes will be employed in a field test of a motorized fighting force to be conducted this summer by the U. S. Army. The tests will be conducted at Fort Leonard Wood under the commanding general, third corps area.

The Experimental Mechanized Force, as the organization will be designated, will comprise detachments from all arms of the service, including cavalry, infantry, artillery, chemical warfare, tank, medical and air.

Basic training will include, individual driving and servicing, small day and night convoys, large convoys, maintenance under field conditions, cross country work and pioneering. The second period will involve simulated war conditions in which the technical qualifications and tactical employment of a motorized force will be determined.

## Rockford Builds New Unit

ROCKFORD, ILL., May 19—The Rockford Metal Specialty Co., has announced plans for a \$100,000 factory building which will be ready for occupancy in about three months. The company manufactures metal stampings of all kinds, but is directing its principal product to the automotive field.

## Sperry A.S.M.E. Nominee

NEW YORK, May 21—Elmer A. Sperry has been nominated for president of the American Society of Mechanical Engineers for 1929, and the vice-presidential nominees are William Elmer, R. L. Daugherty and C. E. Gorton. Election will be by mail ballot closing Sept. 25.

# Calendar of Coming Events

### SHOWS

American Electric Railway Ass'n., Public Auditorium, Cleveland...Sept. 22-28  
American Society for Steel Treating, Commercial Museum, Philadelphia...Oct. 8-13  
Automotive Equipment Association, Coliseum, Chicago...Oct. 22-27  
Berlin...Nov. 8-18  
Brussels...Dec. 8-19  
\*Chicago...Jan. 26-Feb. 2  
International Aeronautical Exposition, Grand Palais, Paris...June 29-July 15  
Layback, Yugoslavia...June 2-11  
London, passenger cars...Oct. 11-20  
National Standard Parts Association, Cleveland Auditorium...Oct. 29-Nov. 3  
\*New York...Jan. 5-12  
Oran, Algeria...April 1-May 31  
Paris, passenger cars...Oct. 4-14  
Paris, trucks...Nov. 15-25  
Prague...Sept. 1-9  
Radio Manufacturers Assn., Inc., Stevens Hotel, Chicago...June 11-15  
United States Good Roads Show, Des Moines...May 28-June 1

\* Will have special shop equipment exhibit.

### CONVENTIONS

American Automobile Association, Bus Division Meeting, Cincinnati...June 27  
American Automobile Association, Annual Meeting, Cincinnati...June 28-29

American Electric Railway Ass'n., Public Auditorium, Cleveland...Sept. 22-28  
American Gear Manufacturers Association, Statler Hotel, Buffalo, N. Y., Oct. 11-13  
American Society for Steel Treating, Commercial Museum, Philadelphia...Oct. 8-13  
American Society for Testing Materials, Chalfonte-Haddon Hall Hotels, Atlantic City, N. J., June 25-29  
Automotive Engine Builders Association, Coronado Hotel, St. Louis, June 11-14  
Automotive Equipment Association, Grand Hotel, Mackinac Island, June 17-23  
Automotive Equipment Association, Coliseum, Chicago...Oct. 22-27  
National Association of Automobile Show and Association Managers, Before-Shows, Drake Hotel, Chicago...July 26-27  
National Association of Credit Men, Hotel Olympia, Seattle, Washington...June 11-16  
National Safety Council, National Congress, New York...Oct. 1-5  
National Standard Parts Association, Hollenden Hotel, Cleveland, Oct. 29-Nov. 3  
Overseas Automotive Club, Luncheons, Hotel Astor, New York...June 14

Radio Manufacturers Assn., Inc., Stevens Hotel, Chicago...June 11-15  
Society of Industrial Engineers, Rochester, N. Y., Oct. 17-19  
United States Good Roads Association and Bankhead National Highway Association, Des Moines...May 28-June 1  
World Motor Transport Congress, Rome...Sept. 25-29

### A. S. M. E.

Cincinnati, Oct. 22-25—Machine Shop Practice.  
Cleveland, Sept. 17-20—Fuels.  
Detroit, June 28-29—Aeronautic Division.  
State College, Pa., June 14-16—Oil and Gas Power.

### S. A. E.

### National

Quebec, Chateau Frontenac...June 26-29

### RACES

Altoona...June 16  
Atlantic City, direction South Jersey Racing Association...May 30  
Belgium...Aug. 12  
France...July 1  
Germany...July 15  
Great Britain...Sept. 22  
Indianapolis...May 30  
Italy...Sept. 2  
Spain...July 29